PROCEEDINGS

OF THE

American Philosophical Society

Held at Philadelphia for Promoting Useful Knowledge

VOLUME 99, NUMBER 2 APRIL 15, 1955

CONTENTS

Toward an Understanding of Man. Some Introductory Remarks about the Objectives and Methods of the Social Sciences. PENDLETON HERRING 39

The Social Responsibilities of Scientists. JOEL H. HILDEBRAND 46

Luigi Castiglioni as a Pioneer in Plant Geography and Plant Introduction. HUI-LIN LI 51

The Cemeteries of Eleusis and Mycenae. GEORGE E. MYLONAS 57

The Heritage of the Classics in Colonial North America. An Essay on the Greco-Roman Tradition. RICHARD M. GUMMERE 68

A Comparative Study of Social and Cultural Change. ALEXANDER H. LEIGHTON and ROBERT J. SMITH 79

Culture Change and Reintegration Found in the Cults of West Kingston, Jamaica. GEORGE EATON SIMPSON 89

Kita Yezo Zusetsu or a Description of the Island of Northern Yezo by Mamiya Rinsō. JOHN A. HARRISON 93

THE AMERICAN PHILOSOPHICAL SOCIETY

INDEPENDENCE SQUARE

PHILADELPHIA 6

1955

The *Proceedings* of the American Philosophical Society is published as an annual volume and ordinarily is issued in six numbers. An author desiring to submit a manuscript for publication should sent it to the Editor, Luther P. Eisenhart, American Philosophical Society, 104 South Fifth Street, Philadelphia 6, Pa.

The annual subscription price is five dollars; combined with a subscription to the *Transactions* the price is ten dollars. Individual copies of the *Proceedings* are offered for sale. This issue is priced at one dollar.

LANCASTER PRESS, INC., LANCASTER, PA.

TOWARD AN UNDERSTANDING OF MAN

Some Introductory Remarks about the Objectives and Methods of the Social Sciences

PENDLETON HERRING

President, Social Science Research Council

(*Read November 12, 1954*)

I

I WELCOME an opportunity to place before you a few thoughts concerning the objectives and methods of the social sciences. Obviously, I can do no more than sketch in broad strokes factors that seem relevant for this occasion.

As scholarly and research activities become more specialized, the task of interpretation is more difficult. This growth of specialization, and the tendency for those of an analytical cast of mind to dissect perhaps more often than to synthesize, explains, for me at least, why the seams in our common intellectual fabric are often more prominent than the mesh itself.

Yet the *common* ground among men of learning is the *important* ground. There is a wealth of writing on the differences and fine distinctions that can be drawn. I would urge that, as we face the present and the future, we recall the spirit of the Enlightenment when men of learning were mindful of their intellectual kinship and of their ties with public affairs.

Why is the topic of my discourse particularly germane to this Society, sitting at Philadelphia, and to its founder?

I think, first, of Franklin's empirical spirit of inquiry and of his readiness to view all that the mind can encompass as the proper range for human curiosity and aspiration. With this, I join his thought that pride is the least subduable of passions and, shall we say therefore, the sin of which to be most wary. The compartmentalizing of knowledge leads to high achievement in special fields with oft-resultant hazards of isolation and narrowness. This drawing apart into the prideful accomplishment of specialists the American Philosophical Society counters, at least, by the gentle semi-annual suasion of requiring members to listen to their fellow-members!

II

To me, the social sciences are too fluid and too varied to warrant neat generalizations about their nature and methods. The social sciences are not a single, ordered body of fact and theory, operating through an internally consistent and generally accepted uniform methodology. We must turn, rather, to the distinctive disciplines of anthropology, demography, economics, political science, psychology, sociology, and statistics, and to the contributions of history, geography, law, and other closely related fields.

Social scientists likewise, even within their respective disciplines, have varied approaches. Some stress the importance of experimental or quantitative methods of data gathering and analysis. Others may be more concerned with practical application and with the bearing of their studies on policy alternatives. Some, absorbed with the critical interpretation of social phenomena, draw added strength from philosophical and humanistic studies. A frequent interplay of methods and approaches is found. I have no relish for offering tidy definitions, for I recall too clearly the words of L. J. Henderson: "To define is to offer a fiat."

Perhaps a semantic confusion may be eliminated at the outset. Those critics who worry about the dominance of science over society must first create their own dilemma; to wit, reify the abstraction "society" and then create an imaginary monster in a white laboratory coat to manipulate "man"—another abstraction. The social scientist cannot study scientifically "man" and "society" in the abstract sense, any more than the natural scientist can study "matter" and "space" viewed as metaphysical abstractions. Scientific methods can be applied to the extent that individuals can be observed or the behavior of social groups examined. Moreover, I question the utility of efforts to compare the social sciences in general with the natural sciences in general, with the intent of applying the word "scientific" as though it were an accolade.

The problem of method in the social sciences (and I would suppose in any other field) is best

understood in relation to purpose. The more scientific the bent of the investigator, the less is he concerned with over-all social problems or broad dilemmas that invite speculative thinking. His quest is for the concrete, the observable, the measurable, the definable. Fact gathering and observation lead to the classification of types or the search for uniformities of reaction or patterns of behavior. Hypotheses are framed in an effort to bring greater coherence to the raw data and to point the way toward further data gathering, with perhaps a sharper sense of relevance. May I recall here Alfred North Whitehead's insistence that science is *a* way of thinking? It provides frames of reference for the analysis of aspects of observed reality. I think the methodology of the social sciences is best understood in these terms. In my opinion, much dispute among social scientists and argument about the social sciences could be eliminated to advantage if Whitehead's basic point were kept in mind.

In baldest terms, social scientists share a common concern in the development and use of methods for ordering data systematically and analytically, and for interpreting their findings as objectively as possible.

First, as to system: to understand the terms and concepts used in any specialized field, it is well to have some elementary knowledge of the basic theory, system, or school of thought upon which the specialist proceeds. Otherwise, his language and his working concepts may be incomprehensible or confusing. Most laymen doubtless find quantum theory too difficult to comprehend even in elementary fashion, and leave the physicist relatively undisturbed. Not so, for example, in the case of psychologists. Popular parlance includes reference to conditioned reflexes, complexes, frustrations, and inhibitions, but the layman seldom has a grasp of the major systems of psychological thought or of their development and interplay over a span of time. He would be unable to distinguish between the systems of psychological analysis offered, for example, by behaviorism, Gestalt psychology, and psychoanalysis. And yet the methods of the psychologist and the words he employs derive their meaning from these frames of reference. The concept of culture, similarly, offers a frame of reference for the anthropologist concerned with societal patterns, kinship systems, and other social structures. A more ambitious approach to system building is well exemplified in the current efforts of sociologists to construct a general theory of social action. The difficulty and complexity of the task, and the abstruse refinements of terminology that ensue, should not detract from an appreciation that the effort is significant. The danger is that system building can lead into theory as a school of thought for faithful adherents, rather than as a guide for ever-questioning analysts.

The history of economics, as a developing body of thought, has been to a substantial degree marked by great systematic thinkers. It has apparently taken a considerable wrench at times to turn economic theory from dialectical debates to the laborious amassing and organizing of facts and statistics, drawn directly from the market place. But, here again, if such empirical data are to have meaning and important application, and even some predictive value, theoretic models and systems of thought must be construed. Fact must be elucidated by theory; unrelated facts cannot speak for themselves.

Time does not permit a survey in these terms of all social science fields. But, in concluding this point, may I suggest that the frame of reference idea has its counterpart for historians when we recall Turner's frontier theory, Beard's emphasis on economic interpretation, Schlesinger's concern with social history, as well as the implicit systems of relevance used by the more traditional historians dealing wtih political, diplomatic, or military phenomena within the framework of evolving nation-states. There must be a theoretic framework to direct the search for meaning in the confused multiplicity of past events. The analysis of fact can only take place by using a more or less avowed theory, more or less systematic in character, as a guide for the recognition of those interrelations assumed to have relevance or thought to have potential significance.

An understanding of the theoretical structure of thought in a given field explains its concepts and its terms. The social sciences have had system builders—those seeking a grand synthesis. More appropriate to the present development of these fields, I think, are the theoretic frames of reference useful for research design and interpretation and the more limited efforts to formulate hypotheses firmly related to empirical data.

And next, I come to the problem of objectivity with respect to the aims and methods of social scientists. It seems to me that the social scientist, as such, must give first place to objectivity as a value in the conduct of his research efforts. His discipline may, or may not, be strengthened

by the theoretical base provided by a great system builder; his discipline may not be characterized by wide agreement on just the right methods of analysis; but if social scientists do not feel a duty to seek objectivity they confuse both themselves and the layman in using the word "science" at all.

Science certainly includes vastly more than an attitude of detachment, but here is the starting point. The validity of curiosity, the subordination of subjective preferences to objective evidence, the readiness to pursue empirical inquiry and to discard unsupported assumptions, the treatment of theories as conceptual schemes rather than as principles to be reverenced: all these elements social scientists must hold in common.

There should be a clear reporting of the methods employed for research, so that other investigators can form an independent appraisal of the operation. There is need for awareness on the part of the research man of when he is speaking from solid evidence or simply giving his informed judgment. Of course, the selection of subjects for inquiry inescapably reflects value judgments. These underlying value considerations may arise from philosophical concerns, public policy issues, or values relating to the advancement of knowledge *per se* and as a social end in itself. Similarly, the findings based on systematic and rigorous research have inescapable value implications.

Let us also reckon with the difficulties facing the research man in the actual course of his study. He is an individual, bearing the complexities of his own heredity, personality, and culture, engaged in studying the behavior of other human beings with their full freight of environmental and personal characteristics; and his reaction to such difficulties can best determine his classification as a social scientist or not. He clearly does not belong in this category if his primary purpose is artistic or literary self-expression, or if he selects as subject matter topics so broad and imponderable in character that they are best discussed in terms of shared faiths.

This is not to dispute the necessity at times to ponder the imponderables of life. We must all engage in such mental effort, or even spiritual travail, whatever our trade or profession. However, confusion does ensue in the minds of some listeners when leading specialists in one field talk with great confidence about problems in other fields in which they have no specialized competence. While this may be a small price to pay for hearing the philosophic reflections of a great physicist or the stout opinions of a leading industrialist concerning morals and ethics, it has nothing to do with science. This is also the case when a leading economist passes judgment on controversial political issues. When bishops speak *ex cathedra,* they do so within a long-established and well-organized convention. The free, and somewhat disorderly, world of science and scholarship has no institutional form for discriminating between personal and authoritative pronouncements and is estopped therefrom by the logic of its own tradition. Yet the consequences are, nonetheless, confusing to the public!

It is obvious, then, that while social scientists are dedicated to a study of man and society they have no monopoly in their *concern* with these problems. There are many other workers in the vineyard. Social science knowledge can contribute, in some measure, toward the realization of the goals of government or religion or industry, but it cannot function as a rival or a substitute. Should social science be conceived in such terms, it would cease to be science; and, should social scientists contrive for such ends, they would find themselves becoming politicians, theologians, or entrepreneurs. On the other hand, an individual's trade or profession does not determine his whole outlook on the world. The scientist, if he shares something of the humanist's esthetic sensitivity, is none the less a scientist; nor need the humanist be less a philosopher even though he possesses some of the businessman's practical sagacity. Is it necessary to remind ourselves that individuals do not operate either as scientists or philosophers, in pure essence? While we can envisage the roles appropriate to specialized functions, each person is more than a specialist.

My duties provide me with a point of vantage for observing many groups of specialists in the social sciences, and I know at first hand the grave difficulties of communication, not only between disciplines and within a single discipline, but likewise even among those concerned with rather limited fields. In my own experience in the Social Science Research Council, I hear no talk of "*The* Scientific Method" but much discussion of what is suitable for research. There are fewer references to "interdisciplinary cross-fertilization" and more effort to draw upon whatever skills are applicable for a specific task; little abstract debate over values but attention, rather, to subjects susceptible of analysis; less indulgence in idle speculation and more concern with

training in languages, statistics, mathematics, and other relevant subjects; less readiness to prescribe remedies on the basis of insufficient evidence, and more care in ordering data and seeking verifiable propositions.

Nevertheless, in the reviews and learned journals, one encounters sentiments such as the following: "The fate of man may well depend upon whether the social sciences can win their struggle to cast aside their adolescence in favor of a reasonable adulthood." Following this dubious metaphor, I would offer as a sign of maturity the virtual cessation of debate among social scientists over whether or not their methods are scientific in an absolute and monolithic sense. Moreover, they are not to be taken as the guardians of man's fate or the guides for human destiny. Someone has likened the social scientist to the elevator operator in a department store. His function reduces wear and tear in showing the range of alternatives, but he is not there to tell the customer where to get off or what to buy.

Social science research can limit the scope for guessing and for uninformed speculation. Just because an important human problem that baffles statesmen has aspects involving human motivation does not mean it can be turned over to the psychologist for ready solution, although the clearer identification of motivational factors may be very helpful. Similarly, the maintenance of full employment or the promotion of world trade is not a responsibility for an economist, but economic knowledge bearing upon such policy objectives would not today be ignored by any intelligent statesman, whatever his partisan loyalties or ideological bias. The success of technical assistance or public health programs in non-industrialized countries has a recognized relationship to anthropological knowledge of the cultures affected. This list of illustrations could be enlarged all the way across the board of current social and economic problems. The point has now been reached where even some party politicians look with real interest to the findings of political scientists and other students concerning, for example, what kinds of voters changed, and why, in the electoral switch of 1952, or how, in fact, delegations behave in their presidential nominating conventions. It is perhaps significant to note, in passing, that Herbert Hoover has utilized very extensively the skills of public administration experts in the work of the Commission on Governmental Reorganization.

The social sciences provide data helpful in dealing with problems covering a wide range indeed. One thinks of research on child rearing, juvenile delinquency, learning theory, personal adjustment and community life, marriage and family counseling, testing and vocational guidance, industrial relations and personnel, environmental factors in mental illness, and so on through the seven stages of man to the problems of old age and the study of bereavement!

We take so much of social science research for granted that it would require a major effort at historical analysis to retrace and make explicit the myriad ways in which these findings have entered into our routines, our vocabularies, our thought processes, and our institutions. The accomplishments of the last fifty years, or so, have become absorbed into our national life and now, as never before, attract the earnest attention of thoughtful scholars in other countries. The methods have often been more rough than ready, and frequently improvised to suit the particular problem tackled. The pursuit of useful knowledge has given a sense of direction to much empirical work, but there is a persistent awareness of scientific necessities. Movement is from the less exact toward the more exact. There is a persistent effort to establish facts and to relate facts in meaningful uniformities or patterns of process and comparability. If you ask me to state in simplest terms the results of our applying the knowledge gained through social science research, I would say these findings help to—

1. avoid waste in both material and human terms;
2. reduce the frictions resulting from ignorance;
3. diminish frustrations and faulty expectations;
4. indicate more systematically and rationally the range of alternatives in particular situations;
5. induce a clearer realization of human potentialities.

To be effective in these terms, all science, and particularly the social sciences, must be carried forward in a society that places a high value upon intellectual freedom and the quest for truth by many avenues. The direction of basic research attention is best determined by the individual historian, economist, psychologist, sociologist, anthropologist, statistician, etc., carrying on his research and teaching.

III

Some critics are prone to offer flat assertions about social science objectives and attitudes. Hence, the topic brings to mind a crude miscellany of charges and contradictory criticisms. Some social scientists may be guilty as charged; but there is no firm basis of fact for reporting the personal creeds, partisan loyalties, or political views of social scientists any more than for lawyers, veterinarians, or florists. To consider briefly some of the current criticisms may serve to indicate at least what the social sciences *are not*. We are dealing, here, not so much with social science objectives as with public misunderstandings.

There are no data for reporting to you in quantitative form what public attitudes may be. Should a survey of such opinion ever be undertaken, it might well consider the following categories. The critics, who might be classified as follows: the dogmatists who say there should not be a scientific approach to social problems; the scoffers who say there can be no such approach; and the skeptics who say, "Show me." These three categories of critics may present fewer difficulties of analysis than the well-wishers, some of whom expect too much too soon on problems that transcend the grasp of science, and a second group who look to the social sciences for pat answers to questions better left to the judgment of responsible individuals. Our chief hope for understanding must come from those laymen sympathetic to experimentation and even trial and error. Some critics assert there can never be a completely adequate "Science of Man," and then conclude by predicting with relish all the tyrannical discomforts that would ensue were this millennium to dawn. Others embroider the fallacies of the "economic man" or the "sociological man" as though these logical constructs were live ogres. Still others picture a moral awakening that is seemingly delayed by the already wide-awake efforts of men to study mankind.

Yet it is on such grounds that charges of "scientism" are based. This curious "ism" is a word of no relevance to the scientist pursuing his research. It is in current polemic use as a device for berating those individuals alleged to regard the objectives and methods of science as embracing the whole aim and purpose of mankind. This footless argument is only worthy of mention as further indication of the need for getting to more laymen an understanding of the scientific approach to reality, of what the scientist attempts and what he, as a scientist, is simply not concerned about. I disassociate the social sciences in objectives and in methods from the philosophic embrace of any "ism": albeit humanism, positivism, relativism, empiricism, pragmatism, or idealism! The individual working in one of the social science fields may prefer any one of these "isms" as a guide for his own life and work, or he may prefer Methodism or Congregationalism. My point is that the objectives and methods of the social sciences do not, in whole or in part, rest on a creed, a single, articulated value system or philosophy. And, least of all, on "scientism."

Some scientists may find in the nature and methods of science itself ground for a personal philosophy which they may take from their laboratory and use as an ethical guide or system of values. This is an intensely personal matter and the individual's own private business. The "ism" that may most appropriately provide some degree of ideologic support for scientific endeavor in the United States may be "individualism." This is hardly to be treated as a formal ideology or philosophic system of values. It is, rather, an American habit of mind, rooted in historical tradition. Though none the less significant for this reason, it is too disparate in character and too widely shared, to be treated as a distinctive ideology for scientists as such.

Paradoxically, some critics argue that the social sciences have a deleterious influence because they ignore individualism and proceed upon mechanistic assumptions that rule out the possibility of human choice. "Determinism" is said to be the philosophic foundation stone; the human being is treated as no better than a machine and the doctrine of free will is denied. From what I have already said, the irrelevancy of this line of discourse should be apparent. In the practical, nonmetaphysical sense, freedom is *enhanced* as our knowledge of limiting factors, or of cause and effect relationships, is increased. Thus, in this sense, the engineer has more freedom to exercise his will with nature than the craftsman; or the doctor than the medicine man. But the social sciences have nothing to offer, pro or con, on free will as a doctrine. This concept belongs to another universe of discourse; it is part of a different frame of reference. Its meaning must be sought in metaphysical or theological, not in scientific, terms. Nor are the limited empirical objectives and quantitative methods of analysis of the social scientist to be pitted against philoso-

phies of history. Each has its place. The effort to discover antecedent-consequent patterns in behavior based on particular and repeated observation of nursery-school children, or to identify variables and determine which are independent and which function as dependent or intervening variables, or to work out correlations in thousands of responses to opinion survey questionnaires, may seem mechanical in method and the results trivial to readers accustomed to grand judgments about the fall of the Roman Empire, the decline of the West, the causes of war, or the future of civilization. It is not that the one or the other approach is the more significant but, rather, that separate skills are needed in building different structures of meaning. While the learned doctors squabble over historicism and relativism, or ask: "If we had to choose, would we be better and wiser with Shakespeare and without psychology and sociology than we should be with them but without Shakespeare?" is the listener to conclude that less scientific method in human affairs will mean more moral strength or better poetry? My plea is for simple tolerance of a division of intellectual labor.

Some critics express concern about what they sometimes call cultural relativity, or even ethical relativity, in the social sciences. They have the impression that to describe, for example, the customs or behavior of people in a different culture in a straightforward fashion, or to display a sympathetic appreciation of the rationale that underlies such behavior, is either to preach an "ethical neutrality" or actually to embrace the tenets of the system described. Let us dispose of these fears bluntly: the moral for our society from such studies of other societies is basically a reminder that the human being has a wider range of possible routines, reactions, capacities, and inhibitions than are revealed or provoked by the culture and customs of any one society. From the standpoint of ethics or morals, the reader could conclude that God works in divers ways His wonders to perform or, from the standpoint of personal choice, that one man's meat is another man's poison. Ethically, cultural anthropology can fortify a scientific humanism or in terms of religion it can be turned to the enforcement of a belief in Christian charity and the brotherhood of man. Of course it *imposes* none of these implications.

I do not see the social sciences as the rival, but rather the auxiliary, of moral purpose, and of normative judgment. They are contributory to policy decisions, and to enhancing man's capacity to cope with life's problems. They can also offer him that ultimate in wisdom: a healthy humility. This gift can be gained from varied sources but the social sciences are not the least rewarding.

Social scientists may be greatly aided by specialists trained in philosophy. The value premises implicit in empirical inquiry often need to be clearly stated and critically examined. Much naiveté, from a philosophic standpoint, might be thereby revealed. Moreover, the philosopher with his training in logic and his flair for abstract thought has much to contribute in the erection of models or systems that would provide a more meaningful structure for empirical investigation. We hear much talk of synthesis; scattered and piecemeal inquiries do not add up to any larger whole. How can the cumulative element be introduced? The skilled experimentalist, the ingenious research designer, the statistician—all can gain from the model-builder, the theoretician, and the philosopher. On the other hand, theory, as moral philosophy, is often so rhetorically phrased and vaguely conceived as to be incapable of ever being reduced to propositions that can be tested.

Social scientists may be sometimes thought of as facing a choice between (1) verifying empirically propositions of limited range and perhaps no particular novelty or (2) propounding statements that seek to convince through their eloquence, insight, or challenge. There is no dearth of editorializing or of free-floating, unrelated theories. The literature is likewise replete with bits and pieces of empirical research. How can greater coherence be achieved? The answer lies, I think, in the further development of distinctive skills in analysis. Able young research men are today very alert to any such advances. Acquiring a new research skill seems more appealing to them than absorbing a novel doctrine. A sense of workmanship, and the command of distinctive methods for examining human relationships point the way to progress. Joined with this is need for the more orderly accumulation of data to which improved methods can be applied.

In the face of these difficulties, some social scientists prefer to hazard interpretations and pass judgment on large questions, even though the evidence available is far from conclusive. Others seek to perfect their methods even though their actual findings are of very limited utility. We can only hope for a better balance of objectives, namely, theoretical formulations testable

by the methods and data we have; and improved methods and larger-scale empirical inquiries consonant with the problems of great social significance that call for study. Research skills, together with the adequate time and money, are essential.

Our meeting here rests on the assumption that men of learning still share tastes and sympathies for research and scholarship, however diverse the subject matter. This is a valued tradition. Recognition of the hazards of parochialism in scholarship is a real safeguard in itself. To be aware of the problem is half the battle. But is there not a larger problem?

Of serious present concern is the need for bridging the gap between scientists and scholars and the general public. The common aspirations basic in the learned world today need to be stated and restated with eloquence and conviction for the man in the street to hear. The welfare of the community of learning is dependent upon understanding and support by the larger community of our democratic society. Have we not been coasting along on popular support of science for the gadgets and comforts it produces, and on public tolerance of scholarship because education is good for the young? Support for research, sympathy for higher learning, confidence in the value of intellectual pursuits—all these must rest upon a general public understanding of their objectives and methods.

The basic objective of the social scientists is the same as the aim of the earth scientists and the life scientists and the physical scientists, and of the humanists and the philosophers. It is the objective of all men of good will, seeking the good life: it is to release the best of mind and spirit to realize human potentialities. The methodology of all learning is subordinate to the purposes sought and to be vital must be changing and developing. My plea is for pluralism of intellectual effort and shared respect for varied methods of inquiry and forms of knowledge. It is this universe of discourse that needs to be understood and appreciated by our fellow citizens as never before.

THE SOCIAL RESPONSIBILITY OF SCIENTISTS

JOEL H. HILDEBRAND

Professor Emeritus of Chemistry, University of California

(Read November 12, 1954)

AT THE meeting of this Society a year ago one of our number, Professor Lewis Mumford, read a paper entitled "Anticipations and Social Consequences of Atomic Energy,"[1] in which he assessed responsibility as follows for the threat presented by atomic bombs:

> The immediate failure to evaluate and exercise a timely control over the forces whose very existence now threatens us, has its origins, at least in part, in a fatal choice that was made in the name of scientific freedom in the seventeenth century. This decision may be symbolized for us by the resolution of the Royal Society of London, at its very inception, to confine its discussions and experiments to the field of the natural sciences, and to omit all concern with matters that traditionally belonged to theology and history. The necessity to escape the limitations of purely subjective inquiry was obvious; but in defining scientific truth, in the terms Galileo and Descartes defined it, as a truth detached from all considerations of purpose, value, or practical application, science cut itself off from all human concerns except those of science itself.

The present threat, he says, could have been forestalled if "we" had taken the timely action of "starving out" science, or at least holding it in check for "social adaptation to catch up." "If we had become as skeptical of the value of science as were St. Augustine and his contemporaries," he said, "science could have been starved out of existence in less than a generation."

He credits the scientists who produced the atomic bomb with an awakening, but one that was too late for them to be able to bring about "a more general social awakening," saying,

> To have aroused mankind fully to the extent of political invention and moral rehabilitation needed to provide even a minimal security, the actions of the scientists would have had to speak even louder than their words. They would have had to close their laboratories, give up their researches, renounce their careers, defy their governments, possibly endure martyrdom, if they were to convey to the public the full urgency of their convictions. Here the new sense of social responsibility failed to overcome the neutralist habits of many lifetimes. Even those who were most deeply disturbed by the possible misapplications of science continued to apply themselves to science. And while "science as usual" prevailed, it was fanciful to hope that "business as usual" and "politics as usual" could be shaken out of their rut.

He concluded with the following proposal:

> These consequences await methodical inspection and assessment by the only body of men capable of performing it: the scientists themselves, acting as a comprehensive faculty, drawing on their membership in every related field, from nuclear physics to bacteriology, from chemistry to embryology and psychiatry. Why should they not meet in a World Congress, under the aegis of the United Nations, and pool their data as to the effects of utilizing atomic energy in wartime extermination.

The members of a "Society to promote useful knowledge" will hardly be astonished that at least one physical scientist, although he is not an "atomic scientist," should object to so sweeping a condemnation of the scientists of three centuries. If I seem to speak with more warmth than is customary in this hall, it is because the subject is a "hot" one. It involves grave moral judgments upon the conduct of ourselves and others. I am impelled to express my criticism, not from any pleasure in disputation, nor because I would expect most members of this society to share Professor Mumford's rather low opinion of the morals and motives of scientists, but because there is a wider audience of people who are easily incited to anti-intellectualism, and to blame others for their own shortcomings.

Let us examine, first, the criticism that scientists have been indifferent to the social consequences of their labors. They proceeded, he says, as if their maxim were, "Let scientific truth be discovered, though the heavens fall." If that be the case, I suspect it is because most scientists would not think well of a heaven that would fall when confronted by truth. But is that a fair statement of the ideals of the founders of the Royal Society? Sir Henry Dale,[2] a re-

[1] Mumford, Lewis, Anticipations and social consequences of atomic energy, *Proc. Amer. Philos. Soc.* **98**: 149–152, 1954.

[2] Dale, Sir Henry Hallett, The freedom of science, *ibid.* **91**: 64–72, 1947.

cent president, in his Pilgrim Trust Lecture, published in our own *Proceedings,* said:

> We may safely regard the Second Charter of the Royal Society (1663) as representing views originating with its earliest Fellows, based on their still new experience, rather than with the Royal Patron who gave them the Charter. It directs the Fellows to apply their studies "to further promoting by the authority of experiments the sciences of natural things and of useful arts, to the glory of God the Creator and the advantage of the human race."

Benjamin Franklin required that candidates for admission to his Junto should give an affirmative answer to the question, "Do you love truth for truth's sake, and will you endeavor impartially to find and receive it for yourself, and communicate it to others?" Are we to conclude that he too was socially irresponsible? Should he have added some such words as, "provided that you are sure no one will ever prostitute your truth to antisocial purposes"?

The history of science furnishes abundant evidence that a scientist usually serves his fellow men better by extending the boundaries of knowledge than by aiming directly at some social result. Penicillin was not discovered by a bedside physician. Basic knowledge has been the main source whence have come countless beneficent applications, including man's release from serfdom, plague, and witchcraft. It has afforded vastly increased opportunities to enjoy leisure, music, travel, and stimulating social intercourse. It has supplied valuable correctives to human thought. It is significant that those who deprecate the gifts of science never renounce any of them to live like the contemporaries of St. Augustine.

Let us examine, next, the contention that a scientist should foresee every evil use that anyone might make of a particular discovery and refrain from making it. Mumford cites the novel by H. G. Wells, *The World Set Free,* as a warning uttered in 1913 against catastrophic explosions. But Rutherford, he says, proceeded, unheeding, with his experiments, and in 1919 "had transformed these timely anticipations into a well grounded probability." As a matter of fact, Rutherford himself, although he had brought about the first artificial transmutation, held the possibility of gaining energy thereby to be illusory because of the large number of high energy α-particles that would have to be shot in order to hit by chance any atomic nuclei, the extremely minute size of which he himself had established. It was only with the discovery of neutrons by Chadwick in 1932 that a particle came to light which, having no electric charge, can fall into a nucleus and make it unstable. But even then there was no reason to believe that nuclei could be made to explode, releasing energy suddenly in such quantities as would make possible an atomic bomb. Meanwhile, the bare possibility of releasing energy for useful purposes would surely have seemed to any reasonable person as a worthy enterprise. The means that scientists and engineers have developed for utilizing the energy of coal, oil, and water have enabled modern philosophers, without slaves, to spend their time in meditation and writing. And even at this perilous stage, atomic energy holds the promise of vast supplies to substitute for the fossil sunlight that we are now fast using up, if only men have sense enough so to use it instead of shooting it off in a suicidal debauch.

The possibility of a catastrophic release of atomic energy was revealed only in 1938, by Hahn and Meitner. But they were looking, not for fission, but for something quite different, an artificial transuranium element. Who could have had either the prescience or the right to order them to desist? That discovery was made in Germany, and American scientists had no way to prevent its exploitation there, where, if British and American scientists had not beat them to its military exploitation, it might have assisted Hitler to realize his dream of "1000 years of Nazism." At what stage in this train of developments can anyone, even with the aid of hindsight, assert that it should have been stopped? Should Norman Lockyer, in 1868, have been denied the use of the spectroscope with which he discovered helium in the sun? Should scientists have refrained from inquiring into the source of solar energy?

A scientist can seldom predict just what he will discover, least of all its possible later misuse in the hands of evil men. Few scientists have that kind of imagination. Many of the most valuable discoveries have been stumbled upon in the search for something else. A visitor at the Radiation Laboratory, in Berkeley, asked Professor E. O. Lawrence what they expected to find with the new bevatron. He replied, "If we knew what we would discover, we would not have had to build the bevatron." A scientific investigation is a question, not a prophecy.

One of our own members, Professor E. Bright

Wilson, Jr.,[3] in his thoughtful book, *An Introduction to Scientific Research*, has clearly stated the position of the scientist in part as follows:

> There is much criticism of scientists today for their alleged indifference to the uses to which their discoveries may be put. Scientists are blamed by many, for example, for contributing to the horrors of modern war. The fact is that the same people who now condemn scientists as soulless and amoral for their wartime work would have been the first to cry "Treason!" if any had refused to assist their country during the war.
>
> It is practically impossible for the pure scientist to predict the moral consequences of his choice of a problem, however much he may wish to do so. The wisest man living cannot foresee all the future effects of a new basic discovery and correctly balance the good uses against the bad. It is hard for nonscientists to believe this but very important that they should be repeatedly shown the evidence which supports it. Even after the fact, who would be bold enough to say that the study of radioactivity should never have been begun? Even aside from the atom bomb, it is impossible to untangle its influence on today's life, but it certainly had a strong effect on theories of atomic structure, chemistry, genetics, electronics, astrophysics, and geology. In fact, like so many other fundamental discoveries, it is mixed into every branch of science today and therefore into every branch of technology.
>
> . . . Let those who decry science come out into the open and say that they prefer ignorance to understanding, darkness to light.

A serious obstacle in the way of a moratorium on science is that the only way to make it truly effective would be through a moratorium on scientists. They would have to be destroyed, because scientific curiosity in the best scientists is ineradicable. It is repressed in most children, as they grow older, by parents and teachers who find it annoying. But not in all. Some carry into adult life the inquiring spirit of the little boy who said to his sister, "I have found out that there is no Santa Claus; and when I get a little older I intend to look into this stork business, too." Little boys like that grow up to cause concern to many persons.

Some people would cut down the tree of knowledge in order to prevent worms from infesting its fruit. The chairman of a Congressional committee, chosen for the job by a major political party, is like Professor Mumford in this respect, he recently uttered a dictum that, "Before embarking upon the solutions of 'problems,' some effort should be made by the trustees of foundations to make certain that their solution is in the public interest." Let no one be under the illusion that it will be possible to set up committees or commissars to prevent scientists from uttering "dangerous thoughts" without having them assume similar jurisdiction over philosophers, economists, historians, lawyers, and everyone else.

There is another obstacle to a moratorium on science. To be effective it would have to be world-wide, and there seems no present way to get the Soviet rulers to join in such a move. They have declared a moratorium on non-Soviet philosophy, history, and economics, but not on chemistry and physics. The evidence is that they are outstripping us in producing scientists.

A British scientist, Dr. J. Bronowski,[4] has stated the case as follows in his book, *The Common Sense of Science*.

> I have said that a scientific answer must be practical as well as sensible. This really rules out at once the panaceas which also tend to run the argument into a blind alley at this stage; the panaceas which say summarily "Get rid of them." Naturally, it does not seem to me to be sensible to get rid of scientists; but in any case, it plainly is not practical. And whatever we do with our own scientists, it very plainly is not practical to get rid of the scientists of rival nations: because if there existed the conditions for agreement among nations on this far-reaching scheme, then the conditions for war would already have disappeared. If there existed the conditions for international agreement, say to suspend all scientific research, or to abandon warlike research, or in any other way to forgo science as an instrument of nationalism—if such agreements could be reached, then they would already be superfluous; because the conditions for war would already have disappeared. So, however we might sigh for Samuel Butler's panacea in *Erewhon*, simply to give up all machines, there is no point in talking about it. I believe it would be a disaster for mankind like the coming of the Dark Ages. But there is no point in arguing this. It just is not practical, nationally or internationally.
>
> There are no panaceas at all; and we had better face that. There is nothing that we can do overnight, in a week or a month, which can straighten by a laying on of hands the ancient distortion of our society. Do not let us fancy that any one of us out of the blue will concoct that stirring letter to *The Times* which will change the black mood of history —and the instructions to diplomats. Putting scientists in the Cabinet will not do that, and women in the War Office will not, nor will bishops in the Privy Council. There are no panaceas. We are the heirs to a tradition which has left science and society out of step.

[3] By permission from, *An introduction to scientific research*, by E. Bright Wilson, Jr., New York, McGraw-Hill Book Co., Inc., copyright 1952.

[4] By permission from, *The common sense of science*, by J. Bronowski, Cambridge, Mass., Harvard Univ. Press, 1953.

. . . And the cure is no deeper either. We must learn to match them. And there is no way of learning this unless we learn to understand both.

Finally, let us examine the proposal that scientists assemble in a World Congress, "with the task of reasserting the integrity and moral responsibility of science itself, as accountable to mankind for correcting, within its own department, the evils that might issue from the incontinent or demoralized exploitation of scientific knowledge." A truly formidable police task! The first difficulty I would foresee is how to get the Russians to attend. Or, if they came, what their instructions would be from their rulers. The Russians might not be the only ones to cause confusion in such a vast conclave. There are scientists in the United States who have convinced themselves, because they have been able to make important contributions in the field of their own long, arduous labor, that they are competent to deal, after but superficial study, with politics, economics, statecraft, or social theory. In so doing they fail, in my opinion, to perform their primary obligation to society, which is, above all else, to seek truth, resisting every temptation of passion, prejudice, and superficiality, as earnestly outside their fields of professional competence as they have disciplined themselves to do within.

There is no need for a "Great Assize of scientific knowledge" to elicit sufficient facts regarding atomic energy to enable mankind to decide that it should be properly controlled. The facts are already clear enough, the problem is how to get people to face them squarely and sensibly. That is a problem in human relations, regarding which physical scientists are not particularly expert. Philosophers, political scientists, economists, and politicians, professors of "the humanities," are the ones who study human relations, what practical solution have they to offer? None. And that is not to be wondered at, because, in the words of Reinhold Niebuhr, "there are solutions, there is no solution." More money for humanistic and social studies offers no sure solution, because additional knowledge about human behavior can be used as well to exploit the people as to elevate them, as illustrated by the techniques of Communist propaganda and American advertising. It is no solution to lay the whole problem in the lap of the scientists, *or* the philosophers, *or* the political scientists, *or* a Senate Committee, *or* the Air Force. The President and Secretary of State could surely handle parts of it better if they were left free to concentrate upon it instead of spending much of their time guarding their rear from attacks by the several volunteer Secretaries of State.

In my humble, unprofessional opinion, we make a dangerous error in regarding atomic bombs as the chief danger. The Communists are doing so well by their techniques of subversion and infiltration that there seems no need for them to incur the risks of atomic warfare And, while they are enormously increasing their supply of well-trained scientists and engineers, we tolerate schools in which a young person with the natural endowments of a scientist becomes the victim of educational theory which professes to "teach children, not subjects," a theory designed by educationists so ignorant that they do not understand even the difference between the dative and accusative cases. The result is that few high school graduates are prepared with both knowledge and desire for any serious intellectual pursuit. While these practices run their course, the Soviet rulers can well afford to wait.

This is no time for philosophers to point an accusing finger at scientists, or for scientists to hold social scientists responsible for the failure of "social adaptation" to keep pace with increasing knowledge. It is not so simple as that. We of the free world will not be saved by science alone, but we will not be saved without science. We will need our every resource of knowledge and intelligence in order to remain free.

I close, by way of summary, with a statement of the social responsibility of scientists made by Professor A. V. Hill[5] of Cambridge University, while he was president of the British Association for the Advancement of Science. It is one to which I, so far as my own conduct is concerned, wholeheartedly subscribe. I cannot dictate to others.

I do not believe that there is such a thing as "the scientific mind." Most scientists are quite ordinary folk, with ordinary human virtues, weaknesses, and emotions. A few of the most eminent ones indeed are people of superlative general ability, who could have done many things well; a few are freaks, with a freakish capacity and intuition in their special fields, but an extreme naiveté in general affairs. . . . The great majority of scientists are between these groups, with much the same distribution of moral

[5] Hill, A. V., *Bull. Atomic Scientists*, 371, 1951. Previously quoted by the writer in: The professor and his public, *Chem. Eng. News* **30**: 4934, Nov. 24, 1952.

and intellectual characteristics as other educated people. By and in their scientific work they have developed the habit of critical examination, but this does not save them from wishful thinking in ordinary affairs, or sometimes from misrepresentation (even occasionally from treachery and falsehood) when their emotions or political prepossessions are strongly enough involved. . . . I would urge that scientific people do not get an exaggerated idea of their importance or of their moral superiority, but regard themselves as citizens who have the same moral obligations of honesty, kindness, courage, and tolerance as others. They have no more right to insulate themselves from the common affairs of life, or the common obligations of citizenship, than have other people. If they have political aspirations, or a mission to improve mankind, let them follow these as citizens, not claiming scientific fame or notoriety as justification for public pronouncements on unrelated matters. The integrity and prestige of science are common property and must not be exploited for selfish ends. And scientists should be implored to remember that, however accurate their scientific facts, their moral judgments may conceivably be wrong.

LUIGI CASTIGLIONI AS A PIONEER IN PLANT GEOGRAPHY AND PLANT INTRODUCTION

HUI-LIN LI[1]

Morris Arboretum, University of Pennsylvania

A VERY significant aspect of plant distribution, the striking relationship between the floras of the middle latitudes of eastern Asia and eastern North America, played an important part in the formulation of plant geography as a science in the past hundred years. This relationship, as is now well known, was first expounded largely through the efforts of Asa Gray, whose illuminating series of papers on this subject, starting first in the form of a short note in 1840, contributed much to our knowledge on the origin and development of the northern floras.[2]

Gray, however, was not the first to discover this intriguing phenomenon. As Fernald briefly notes,[3] as early as 1751, Halenius, a student of Linnaeus, in his thesis, *Plantae Camschatcanses Rariores,*[4] pointed out several cases of identical plants between Kamtchatka and Canada, such as *Anemone, Heuchera, Spiraea, Asplenium, Lycopodium, Swertia,* etc., which show the close relationship between northern America and the eastern border of Siberia.

The floras of northeastern Asia and northern North America are closely related and this relationship extends also to other regions of the northern latitudes. Strictly speaking, this relationship of widespread genera is not exactly the same as that of the middle latitudes of the eastern parts of the two continents, the most distinctive feature of which being the large number of disjunct woody genera peculiar only to these two widely separate regions, namely temperate eastern Asia and eastern North America.

The close relationship between the plants of North America and those of the northern part of Asia must have been noted also by other early botanists. For instance, Pursh, in the preface to his American Flora published in 1813,[5] mentioned Pallas's herbarium as "highly useful to me, in comparing the plants of North America with those of the North of Asia, to some of which they have a great affinity and others are common to both continents."

The credit for first disclosing this important floristic relationship of eastern Asia—eastern North America probably should go to Luigi Castiglioni, an Italian botanist who visited the newly founded United States in 1785–1787. Upon his return to Italy he wrote a work in 2 volumes, *Viaggio negli Stati Uniti dell'America Settentrionale fatto negli anni 1785, 1786 e 1787 con alcune osservazioni sui vegetabili più utili di quel paese* (Milano, 1790).[6] This is the chief source of information regarding his travels and his observations on the American flora. The work is divided into two parts, the whole of the first and about half of the second consisting of his observations on colonial civilization. The second part (second volume, pp. 169 to 402, the end of the book), entitled *Osservazioni sui Vegetabili più Stati Uniti* enumerates in alphabetical order, according to Linnaean nomenclature, the plants he observed, giving notes on the botany, taxonomy, and uses of all the common trees and shrubs and some of the more interesting herbs.

Both Castiglioni and his work are very little known. It is perhaps due to a very large extent to the language barrier that this exceedingly important contribution to early American history and botany escaped the notice that it well deserves.

As early as 1891, Faxon, lamenting on the neglect of this work, wrote a note[7] calling the attention of botanists to the existence of the book.

[1] My thanks are due to Dr. J. R. Schramm for his kindness in reading the manuscript and offering valuable suggestions, and to Mrs. E. J. Schreiner for her help in translating certain passages in Castiglioni's text.

[2] For a detailed review of this problem, see Li, H. L., Floristic relationships between eastern Asia and eastern North America, *Trans. Amer. Philos. Soc.* N. S. **42**: 371–429, 1952.

[3] In a footnote, *Rhodora* **33**: 2, 1931.

[4] Published in Linnaeus, *Amoen. Acad.* **2**: 332–364, 1751.

[5] Pursh, F., *Flora Americae septentrionalis,* 2 v., London, "1814."

[6] A copy is made available through the courtesy of the library of the American Philosophical Society. This copy, presented to the Society by Castiglioni, was transmitted through the hands of Benjamin Rush.

[7] Faxon, C. E., Castiglioni's travels in the United States, *Garden & Forest* **4** (159): 110–111, 1891.

Am. Phil. Soc.

VIAGGIO

NEGLI

STATI UNITI

DELL'

AMERICA SETTENTRIONALE

fatto negli anni 1785, 1786, e 1787

DA

LUIGI CASTIGLIONI

Patrizio Milanese, Cavaliere dell'Ordine di S. Stefano P.M., Membro della Società Filosofica di Filadelfia, e della Patriotica di Milano.

Con alcune Osservazioni sui Vegetabili più utili di quel Paese.

TOMO SECONDO.

MILANO.

Nella Stamperia di Giuseppe Marelli

Con Permissione.

1790.

FIG. 1. Title page of Castiglioni's *Viaggio*.

Faxon notes that Castiglioni's "account of our trees and shrubs is . . . by far the most interesting that had appeared at that time." He praises highly the author's sagacity in distinctly and repeatedly insisting upon the affinities of the plants of eastern North America with those of Japan and China. He concludes his short note with the remark that the work "has been so strangely neglected . . . that many to whom the book would be of interest are perhaps ignorant of its very existence, and it may be doing some service, therefore, to call attention to the fact that 'the story is extant and written in very choice Italian.'"

Apparently Faxon's entreaty was not heeded, as in subsequent years Castiglioni was still much forgotten and Faxon's short review itself was rarely noted.[8]

More recently Pace, in a paper discussing the relationship of Italy and the American Philosophical Society,[9] deals at considerable length with the life of this much neglected personality, Luigi Castiglioni. The interested reader is referred to this article for the fullest account of his life and his travels in the United States. Some pertinent facts will be briefly summarized below.

Luigi Castiglioni (1756–1832) was a member of an old patrician family. He manifested an early interest in botany, which he later studied at the University of Pavia under the celebrated Giovanni Scopoli. In 1785, at the age of twenty-nine, he visited the United States, sailing from England.

His purpose in visiting America was twofold. First, he considered the American Revolution one of the most important events of the century. He thus desired to witness the political birth of a Republic composed of distinct nationalities and spread out over a vast area with different climates and products. Secondly, he intended to make a collection of seeds with a view to introducing the plants to Europe and to investigate the most useful plants, studying ways of cultivating and propagating them and their uses.

He traveled in North America for two years, from May 17, 1785, when he first landed in Boston, until May 16, 1787, when he left New York, in a planned voyage of observation through all the thirteen colonies and a portion of Canada. During the period he made many contacts with distinguished personalities of the period, including George Washington, Benjamin Franklin, and Benjamin Rush. He came to know Humphrey Marshall and the Bartrams as well as many members of the American Philosophical Society to which he also was elected a member in 1786.

Castiglioni brought back many seeds and plants. Introductions attributed to him include black locust (*Robinia*), catalpa, and arbor vitae.[10] In recognition of his botanical achievements a genus, *Castiglionia*, based on a plant from South America, was dedicated to him by the Spanish botanists, Hipolito Ruiz Lopez and Jose Pavon,[11] which unfortunately was not well founded and has since become a synonym of *Jatropha* (Euphorbiaceae).

Pace considers Castiglioni as one of the most successful interpreters of the New World to the Old. His accounts of political situations, indus-

[8] I am indebted to Dr. Roland M. Harper for bringing this article to my attention.

[9] Pace, A., The American Philosophical Society and Italy, *Proc. Amer. Philos. Soc.* **90**: 387–421, 1946.

[10] See Pace, *op. cit.*, 396.

[11] Ruiz and Pavon, *Fl. Peruv. et Chilen. Prodr.* 139. t. 37, 1794.

tries, populations, cities, manners, Indians, etc., of the various states, all of great and abiding interest, show that Castiglioni was altogether most keen and observant. His botanical contributions are equally notable and will be discussed in this paper.

Although there are scattered references on plants in his narrations of the various states in the main part of his travels, botanical observations are presented primarily in two parts. One, in a few paragraphs included in his general summary of observations *Degli Stati Uniti in Generale* (Chap. 28), he developed particularly fully the idea about the close floristic relationships between eastern Asia and eastern North America. The second part is the account on botany mentioned above and entitled *Osservazioni sui vegetabili più Stati Uniti.*

As a taxonomic work, Castiglioni's contribution is perhaps not as important as the works of his immediate predecessors, Wangenheim and Marshall. Nevertheless, his accounts, in Latin

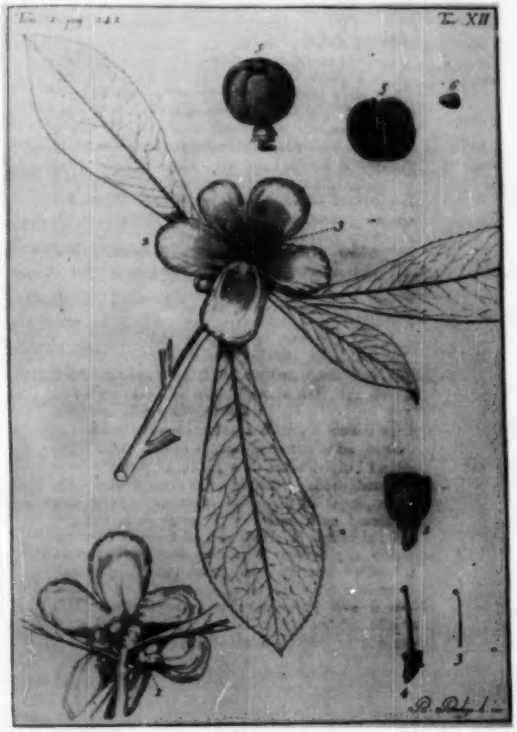

FIG. 2. Franklinia, *Franklinia alatamaha* (Castiglioni's *Viaggio,* Pl. XII).

FIG. 3. Scrub Oak, *Quercus ilicifolia* (Castiglioni's *Viaggio,* Pl. XIII, as *Q. pumila*).

and Italian, are scientifically and lucidly presented. The careful approach of his presentation can be shown by the citation of common English names in practically every case, often giving exact source as to their geographical origin. These accounts are full of interesting and useful information on both the botanical and economic features of these plants in eighteenth-century America. Francis Harper, for instance, had recourse in many cases to Castiglioni's account to identify the plants mentioned in John Bartram's travels.[12] Bartram covered an area and route very similar to that of Castiglioni.

From a purely taxonomic point of view, Castiglioni's work is not devoid of interest. He adopted a broad concept on species, consequently relegating many of the plants recognized as species by Marshall, Linnaeus, and others to varietal status. He also effected some combinations in species names and named and described others that should be considered new taxonomic entities. These were never noted by later botanists

[12] See *Trans. Amer. Philos. Soc.* **33** (1), 1942.

FIG. 4. Poison Sumac, *Rhus vernix* (Castiglioni's *Viaggio*, Pl. XIV).

and none of his names were indexed in *Index Kewensis*. His three plates give good figures of the Scrub Oak, *Quercus ilicifolia* (as *Quercus pumila*), Poison Sumac, *Rhus vernix*, and Franklinia, *Franklinia alatamaha;* these have also not been listed or cited anywhere. Of interest to entomologists is the fact that he also described a beetle as *Chrysomela gleditsiae*.

Rehder in his *Bibliography of Trees and Shrubs* [13] has given the most complete and only listing of Castiglioni's varietal names. He accounts for only about 20 names, less than half of the 46 new varietal names given by Castiglioni. Earlier, Sargent [14] cited a few references from Castiglioni's work and he was the only botanist to adopt a Castiglioni name, namely, *Populus balsaminifera* var. *virginiana* (Castiglioni) Sargent [15] based on *Populus nigra* β *virginiana* Castiglioni. In its later form, *Populus deltoides* var. *virginiana* Sudworth,[16] this name is sometimes still in current usage.

Practically none, if any, of Castiglioni's specific and varietal names, according to the present rules of botanical nomenclature, can be adopted and thus will not upset current botanical names.

Returning to the main subject of this paper, the philosophical analysis of the floras, although presented in a more casual way than by Asa Gray half a century later, ranks Castiglioni high as a pioneer plant geographer, and one of the very few of the eighteenth century, long before the inception of plant geography as a scientific discipline in the middle of the nineteenth century. In his general summary on the vegetation of eastern North America, he gave the following account:

> It is more to be observed that the plants are very similar to the eastern coast of northern Asia, for example, growing here as in Japan and China, the Magnolia (*Magnolia glauca* L.),[17] the Illicium (*Illicium anisatum* L.), the Calycanthus (*Calycanthus floridus* L.), and the Ginseng (*Panax quinquefolium* L.), and many others. (For further proof, compare the Flora Japonica of Thunberg with the Flora Virginica of Gronovius.) This thus confirms the assertion of Franklin that the eastern coasts of the old and the new continents bear much analogy in their climates.

He further observed that such genera as *Quercus, Pinus* (*Sensu lato*),[18] *Acer, Rosa, Spiraea, Smilax,* and *Vaccinium* are widespread also in Europe while many of the species of these genera of North America and Europe are closely related. He thus recognized quite clearly that the close floristic relationships between eastern Asia and eastern North America are indicated by certain genera peculiar only to these two distant regions, whereas those wide-spread genera are common to all continents of the middle and northern latitudes.

Of the various genera discussed by him, he noted among others especially *Calycanthus* and *Catalpa* as proofs that the climates of eastern Asia and eastern North America are analogous.

He pointed out that the genus *Calycanthus* is common to the United States and Japan, represented by *C. floridus* L. in the former and the closely related *C. praecox* L. in the latter. *Caly-*

[13] Rehder, A., *Bibliography of cultivated trees and shrubs, hardy in the cooler temperate regions of the northern hemisphere*, Jamaica Plain, Mass., Arnold Arboretum, 1949.

[14] Sargent, C. S., *The sylva of North America*. 14 v., Boston & New York, Houghton, Mifflin, 1891–1902.

[15] Sargent in *Jour. Arnold Arb.* **1**: 63, 1919.

[16] Sudworth in Check List For. Trees U. S. *U. S. Dept. Agric. Circ.* **92**: 65, 1927.

[17] Quotations in parentheses in this paragraph are originally in footnotes.

[18] Castiglioni adopted *Pinus* in the Linnaean sense to include nearly all conifers.

canthus praecox is now recognized as the type of a distinct genus *Chimonanthus*. The species, *C. praecox* (L.) Link. is native to China but cultivated in Japan. The two genera are closely related and they are the sole representatives of a distinct family Calycanthaceae occurring in no other region of the world except North America and eastern Asia. The genus *Calycanthus* contains 5 species, 4, including *C. floridus* L., in the eastern United States and 1 in California. The Asiatic genus *Chimonanthus* has 3 species, all native to China.[19]

Castiglioni also discussed especially the case of *Bignonia catalpa* L. of eastern North America and a closely related plant in Japan recognized by Lamarck as a variety of the American species. *Bignonia catalpa* is now considered as the type of a separate genus *Catalpa*, distinct from *Bignonia*, and known as *C. bignonioides* Walt. There are about 9 other species in North America with the range extending from the eastern United States to the West Indies. Otherwise the genus occurs only in eastern Asia, with about 5 species extending from northern to western and central China. The plant noted by Kaempfer and Castiglioni, and referred to *Bignonia catalpa* also by Thunberg, is now called *Catalpa ovata* Don (*C. kaempferi* Sieb. & Zucc.), which grows in central China and is widely cultivated in both China and Japan.[20]

It is interesting to note that while Asa Gray first discovered the similarities in the floras of eastern North America and Japan when he reviewed in 1840[21] the first part of Siebold and Zuccarini's *Flora Japonica* (1826–1870),[22] similarly the closeness of the two floras was first drawn to Castiglioni's attention when he compared Thunberg's *Flora Japonica* (1784)[23] with the American flora. He pointed out that such similarities are readily noted when Thunberg's flora is compared with Gronovius' *Flora Virginica* (1739).[24] The other work on the flora of China and Japan frequently referred to by Castiglioni is the pre-Linnaean study of Kaempfer, *Amoenitatum Exoticarum* (1712).[25]

The sagacity of Castiglioni can be attested by the fact that the floristic studies on Asia made by Thunberg and Kaempfer and published many years before Siebold and Zuccarini are necessarily more fragmentary and less critical than the later one by Siebold and Zuccarini which was based on more extensive assemblages of specimens. Yet Castiglioni not only identified the distinct relationship which exists between the floras of Japan and eastern North America but deduced also that the same relationship extends to continental eastern Asia. Gray's study concerns mainly that of Japan and, as revealed later by more extensive exploration and floristic research, the Chinese flora contains more types than the Japanese flora that show close relationship with the flora of eastern North America.

The early recognition of the floristic relationships between eastern Asia and eastern North America by Luigi Castiglioni is not only of historic interest with regard to this problem in plant geography, but it has distinct significance in present day forestry and horticulture. Castiglioni had the foresight to seek analogy in climates and floras in his attempt to introduce useful plants to his native land. Over one and a half centuries later, this very idea has belatedly gained increasing attention while much still remains to be done in practice.

The close floristic relationships existing between eastern Asia and eastern North America make available for the latter area a vast source of useful plants for introduction. Eastern Asia, because of geological history and past and present climatic conditions, has the richest flora of all temperate regions of the world. And many plants native to eastern Asia thrive when introduced into eastern North America; and the eastern North American plants are similarly quite at home in eastern Asia.

The very rich flora of eastern Asia contributes not only to eastern North America but also to other temperate regions as well. Sir William Wright Smith compiled some data showing the contributions of various parts of the world to European gardens.[26] The chief sources are naturally Asia and North America because of their climatic relation to Europe. Of hardy herbs,

[19] See Li, *op. cit.*, 385–386.

[20] See Li, *op. cit.*, 397–398.

[21] Gray, A., Dr. Siebold, Flora Japonica; sectio prima, Plantas ornatui inservientes; digessit Dr. J. G. Zuccarini: fasc. 1–10, fol. [A review], *Amer. Jour. Sci. & Arts* **39**: 175–176, 1940.

[22] Siebold, P. F. von, and J. G. Zuccarini, *Flora japonica*. . . , 2 v., Leyden, 1826–1870.

[23] Thunberg, C. P., *Flora japonica*. . . , Lipsiae, 1784.

[24] Gronovius, J. F., *Flora virginica*. . . , Lugduni Batavorum, 1739.

[25] Kaempfer, E., *Amoenitatum exoticarum*. . . , Lemgoviae, 1712.

[26] Smith, W. W., The contribution of China to European gardens, *Notes Bot. Gard. Edinb.* **16**: 215–222, 1931.

North America contributed 1,100 species and Asia 1,925. Of conifers North America contributed 77 species and Asia 105. Of trees and shrubs, North America contributed 890 species, or 23 per cent, and Asia 1,810 species or 47 per cent. These figures show distinctly the importance of Asia as a source of hardy ornamental plants. Merrill [27] calls eastern Asia "the great reservoir from which we must draw future additions to our stocks of hardy ornamental trees, shrubs, and herbaceous plants."

The flora of eastern Asia is now fairly well known botanically but the horticultural and sylvicultural possibilities, in spite of numerous attempts already made in the recent past, are infinite. This is the region from which eastern North America will derive future stocks of hardy plants, trees, and shrubs as well as herbs. The worth while species from Europe, the flora of which being not particularly rich, were long ago introduced. And plants from the tropics and subtropics as well as the temperate regions of the Southern Hemisphere are climatically incompatible.

Many familiar plants now planted in eastern North America are from eastern Asia. Among the flowering shrubs and trees, the Asiatic forsythias, cherries, crab-apples, hydrangeas, spiraeas, magnolias, wisterias, and many others adorn the American garden. The ginkgo, various conifers, elms, chestnuts, etc., from Asia are important shade or forest trees. But there are still thousands of other eastern Asiatic species that have not been introduced but which will prove equally at home here.

[27] Merrill, E. D., Eastern Asia as a source of ornamental plants, *Jour. New York Bot. Garden* **34**: 238–243, 1933.

The importance of plant introduction is accentuated in recent years by the failure of some important native trees. The chestnut blight brought into America through the introduction of a fungus disease probably from Japan has in the course of a few years nearly exterminated all the chestnut trees in eastern North America. The Chinese species of *Castanea* are highly immune to the disease while the European and Japanese chestnuts are also susceptible.[28] Therefore, it is all but natural that an attempt is being made to rehabilitate chestnut forests in this country by using the immune Chinese species. Similarly the Dutch elm disease introduced in recent times has threatened the extinction of the elm trees. The Asiatic species of *Ulmus* are known to be more or less immune to this disease.[29]

With our more advanced knowledge and more refined technique in growing, selecting and breeding ornamental and economic plants, the problem of plant exploration and introduction is entering into a new period. Plants are no longer to be introduced at random and by trial and error, but instead with due emphasis on their particular genetical nature and ecological preference. Forestry and horticulture are thus, with this newer approach, about to enter upon a more prosperous period of development by the addition of new species, strains, and types. Looking back 164 years, we may express our profound admiration to Luigi Castiglioni, who at this early date approached this problem foresightedly on a sound practical basis and enlightened theoretical enunciations.

[28] Gravitt, G. F., Chestnut blight in Asia and North America, *Unasylva* **3** (1): 2–7, 1949.

[29] May, C., Outbreaks of the Dutch elm disease in the United States, *U. S. Dept. Agri. Circ.* **322**, 1934.

THE CEMETERIES OF ELEUSIS AND MYCENAE

GEORGE E. MYLONAS

Professor of Art and Archaeology, Washington University, St. Louis

(*Read November 12, 1954*)

ELEUSIS is located fourteen miles to the west of Athens; today it is an industrial town, but in antiquity it was one of the great religious centers of the pagan world, where the secret rites of Demeter and Persephone, known as the Eleusinian mysteries, were celebrated annually from the fifteenth century B.C. to the fifth century of our era. Since 1882 the Greek Archaeological Society has been excavating the sanctuary area of Demeter and Persephone and as a result the entire sacred precinct, with its temple and courts, monumental gateways and fortification walls, stands revealed. In 1952 the Society, in collaboration with Washington University, began to explore one of the cemeteries of Eleusis and that exploration was continued in the summers of 1953 and 1954 with satisfying results.[1]

The cemetery is located to the west of the sanctuary area along the northern slopes of a series of barren hills, the easternmost of which in prehistoric as well as in historic times served as the acropolis of Eleusis and the seat of the cult of Demeter. Along these slopes runs the road to Megara, a road that can now be traced for a good distance by the wheel marks of chariots noticeable on the rock which in places comes almost to the surface. In accordance with the ancient custom, along this road the Eleusinians buried their dead. Because of the slope and the continuous erosion over centuries, the graves are as a rule found in a small depth and often their covers are actually on the surface of the soil.

The extent of the cemetery is considerable; thus far we have tested an area 300 meters in length and graves are to be found east and west of that area. The extent of the cemetery, however, is not its important feature. Our excavations have proved that it was in continuous use from the Middle Helladic Period (i.e., the Middle Bronze Age) to the era of the Roman occupation of Greece, from *c.* 1800 B.C. to A.D. 450. In this long period of use lies its uniqueness. Graves of the various centuries and periods are found next to each other and over each other in a profusion that is almost bewildering (fig. 1). And in spite of the fact that Eleusis in antiquity was not a large metropolis but a provincial town, its graves have yielded a surprising amount of works of art and of important information.

The oldest prehistoric graves found thus far belong to the Middle Helladic Period and are in the form of cists made up of four slabs set vertically and closed by a single slab which served as a cover or lid.[2] The dimensions of the cist graves are small; they average 0.90 m. × 0.60 m. × 0.40 m., and, in the older examples, a single body was laid in them in a strongly contracted position and on a floor covered with pebbles. No gifts or other furnishings were placed either in the cist or over it. As time went on, however,

FIG. 1. General view of section Θ. The stone graves belong to the prehistoric period. Graves covered with tile, the vase burial in the front left corner, and the skeleton laid on earth belong to the fifth and fourth centuries B.C.

[1] In 1952 and 1954 I directed the excavations as a Fulbright Senior Research Fellow and as a Fulbright Professor of Archaeology at the University of Athens, Greece. A grant awarded me by the American Philosophical Society in 1953 enabled me to return to Greece in the summer of that year to continue the excavations. For this I want to express my indebtedness to the Society. *Cf. Year Book, Amer. Philos. Soc.* for 1953: 276–278, 1954.

[2] For a description of this type see Mylonas, G. E., and J. Travlos, Excavations at Eleusis, *Praktika, Grk. Archaeol. Soc.*, 59–62, 1952. (In Greek.)

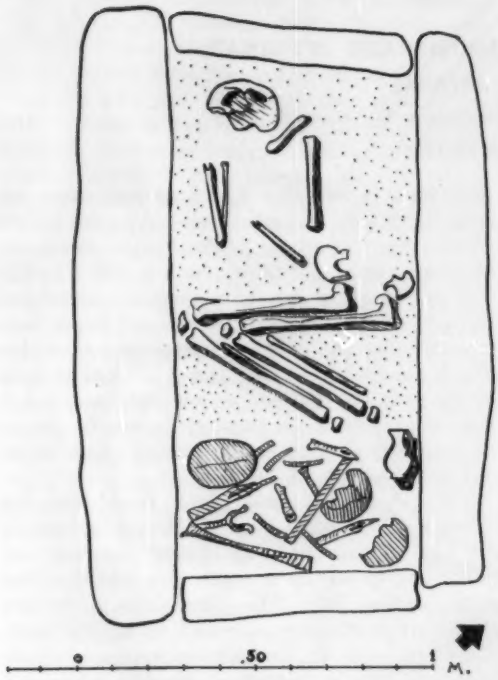

FIG. 2. Contents of grave Θπ1. Drawing by J. Travlos.

it became customary to bury more than one body in the same cist, gifts and furnishings began to be placed by the body, and the size of the cist and even its construction gradually changed. Grave Θπ1 is a good example of these developments (fig. 2). Although the size of the cist was somewhat increased, still it was too small to accommodate multiple burials. As a result the custom was developed to brush to one corner or to one side the remains of those buried first to make room for the one to be laid last. This custom has bothered scholars for a long time and ever since it appeared suddenly in the shaft graves explored by Schliemann and Stamatakes in 1876–1877. It is now proved not to have been an intrusive foreign element, but one developed normally in the mainland of Greece and in the second half of the Middle Helladic period. At the same time appears the custom of erecting stelae or tomb stones over a grave; an early example of this we have over Grave Θπ9.

Among the bones which had been brushed to the side and in Grave Θπ1 (fig. 2) were found two vases marking the beginning of the habit of placing gifts and furnishings, of kterismata as they are now known, in the graves. It is possible to assume that the habit started as a result of the intercourse that the people of the mainland of Greece resumed with Crete in the second half of the Middle Helladic period. But even after the custom was established and for a long time the prehistoric inhabitants of Eleusis placed few kterismata in their graves, usually cups with a single handle decorated in the matt-painted technique and jugs for holding liquid. Grave Θπ7 will illustrate the custom and the type of kterismata (fig. 3). It will also illustrate the changes and developments which the construction of the graves underwent in the closing half of the Middle Helladic period. For then the size of the cists increased; a number of slabs—more than four—were employed for the construction and along with them smaller stones laid in horizontal layers.

By the end of the Middle Helladic period the cist grave had gradually evolved to a built shaft grave of large proportions with an entrance open-

FIG. 3. Contents of grave Θπ7.

FIG. 4. Vases from grave Θπ14. They belong to the transitional years between the Middle and the Late Helladic periods, i.e., *ca.* 1600 B.C.

ing at the end of one of the long sides (see fig. 8,B). The graves were family sepulchers and the custom of brushing aside the bones of earlier interments continues. The door openings were blocked by slabs and a pile of stones was accumulated in front of the slab at the end of the outer approach. Vases and articles made of bronze, such as knives and tweezers, are common and apparently the dead were placed in the graves decked in their best because among the articles found are beads of semi-precious stones that once formed necklaces, and bronze coils which were used to decorate and keep in position the hair in a manner described by Homer.

The increased dimensions of the grave provided more space for the interment and as a result the bodies toward the end of the period were laid in a more extended position. A good example of that development is offered by grave Θπ14 where a single skeleton was found laid in an extended position. Two vases found by its feet are decorated in a semi-lustrous paint characteristic of the transitional period from the Middle to the Late Helladic period (fig. 4). The excavated graves of this Late Helladic or Mycenaean period prove that the grave architecture and customs continued without a break or interruption to the end of the prehistoric era. Often older graves were employed by the Late Helladic inhabitants and then the bones of the ancestors were packed in pits dug in the floors of the grave and only rarely were placed in trenches outside of the graves. In Θπ4 we have such a later use of an older grave (fig. 5). Its construction and early use date from the closing years of the Middle Helladic period, but in Late Helladic or Mycenaean times it was used again, and repeatedly, for against its west side a large amount of bones and vases were found while by its door were lying the skeletons of the bodies buried in the grave before it was closed forever. One of these skeletons belonged to a child and around it in their original position we found the kterismata laid down with it: four vases and three terracotta female figurines of the type φ.[3]

From the shaft graves with a side entrance developed a type of grave found now for the first time; we call it type Γ because its plan recalls the form of that Greek letter. The horizontal bar of the letter is formed by a vestibule and a well-constructed doorway, while the chamber of the grave is long and narrow, corresponding to the vertical bar of the letter. One of the latest examples of this type, excavated in 1954, exhibits walls with a decided inward batter accomplished in the manner used for the construction of the tholos tombs. To the end of the prehistoric

FIG. 5. Contents of grave Θπ4.

[3] *Cf.* Mylonas, G. E., A Mycenaean child burial from Eleusis, *Memorial Volume for G. P. Oikonomos,* 35–44, 1954. (In Greek.)

FIG. 6. Mycenaean chamber tomb with an intrusive burial of a woman belonging to the Geometric period (eighth century B.C.)

period the graves remain family tombs and are equipped with kterismata. We may finally note that in the closing centuries of the Late Helladic or Mycenaean period occasionally the area of a grave of some importance was surrounded by large boulders reminiscent of the grave circles of the Middle Helladic period and reflecting perhaps the custom of sheltering the bodies of important personalities—rulers and princes—in tholos tombs.

Among the prehistoric graves excavated thus far are included eight graves which were found in a group in the western section of the cemetery. Six of these graves were opened and investigated in antiquity and after that investigation they were filled again with pebbles and fragments of broken stone. The area they occupy was separated from the rest by well-constructed walls and it was never used again for burial. This operation can now be placed in the closing period of the Geometric Age, in the second half of the eighth century B.C. It seems to us certain that this group of graves is the one attributed by the ancient Greeks to the legendary heroes who at the instigation of Polyneikes undertook the fateful war against Thebes, which was shown to Pausanias in the second century of our era and which, according to Plutarch, was pointed out to the visitors of Eleusis. They seem to be the graves which Euripides had in mind when he was composing his *Supplients*.[4]

[4] Pausanias, I, 31, 1. Plutarch, *Theseus*, 29. Only six of the seven leaders against Thebes were buried at Eleusis, since the seventh, Amphiaraos, was swallowed by the earth.

To the north of the group of the "Seven against Thebes" in 1954 we uncovered a chamber tomb of the regular Mycenaean type, with dromos, doorway still blocked by a wall, and a trapezoidal chamber. The important fact about this grave is that it was dug in the earth and in a comparatively level space. As a rule such graves are dug in the rock completely or partially and at the side of rising ground or a hill. Unfortunately the roof of the chamber had caved in, apparently in remote antiquity, and it was used for the burial of a woman who lived in the Geometric Age, in the eighth century B.C. (fig. 6). We must note especially that the skeleton was preserved in an amazingly good condition. Of the original contents of the prehistoric grave have survived a number of bronze objects, found in the southeast corner of the chamber. Among them are a bronze razor and a bronze spear point. By the dromos of the chamber tomb was revealed another burial of the Geometric Age that yielded five characteristic vases.

The geometric graves will introduce a brief presentation of the sepulchers of the historic period excavated thus far in the cemetery of Eleusis. They include both inhumations and cremations, but the examples of the latter seem to begin in the first decades of the fifth century B.C. The inhumations include burials in stone sarcophagi, in tile graves, and in mere shafts dug in the earth. An assortment of gifts is al-

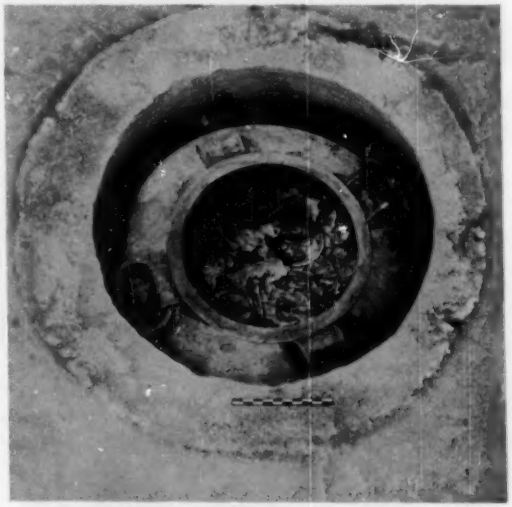

FIG. 7. Bronze cinerary urn of the mid-fifth century B.C. in its stone sarcophagus.

FIG. 8. A terracotta larnax with its cover as found (A). Note the small vases laid by it. The grave built in stone (B) belongs to the closing years of the Middle Helladic period and illustrates the most advanced type of grave of that period: a shaft of considerable dimensions built with slabs and stones laid in horizontal tiers and a side entrance (C) covered by slab.

ways placed in or by the grave. These include vases, terra-cotta figurines, articles of adornment in bronze such as mirrors and bronze pins. The cremations present greater interest. Sometimes the burned skeletal remains were left on the pyre and were covered over with earth; other times they were piled at its side and they as well as the area used for the cremation were covered with earth. Often carbonized bones and ashes were placed in urns. To the last type belong two exceptional burials, one of which was uncovered in June of 1953 in section Z of the cemetery and the other in June of 1954 in section Γ. In both instances the remnants of bones and ashes were placed in a bronze urn which in turn was deposited in a stone sarcophagus, rectangular on the outside, cylindrical on the inside. The openings of the sarcophagi were sealed with a rectangular block in the one instance, with a circular block of poros stone in the other. The burial excavated last June yielded a bronze urn wonderfully preserved (fig. 7), while the example cleared in 1953 yielded a bronze urn similar to the one found in 1954, five lekythoi which will date the cremation and a well-preserved linen stole, 2.20 m. in length and 0.50 m. in width. This piece of cloth from the middle of the fifth century B.C. is unique and very valuable, since ancient Greece unlike Egypt has yielded but small fragments of cloth, none from the Classical era.

The most interesting graves of the historic era, however, belong to infants and children. So many graves have been found grouped together that the conclusion is inescapable: part of the cemetery must have been used exclusively for the burial of children and infants. Most of these burials are inhumations with a few cremations dating from the fifth and fourth centuries B.C. Many of them are mere trenches cut in the earth, but burials in sarcophagi of stone, in wooden coffins, in larnakes (i.e., coffins made of terracotta) are common (fig. 8). Grave Θ26 is a well-preserved example of a burial in a larnax.[5] It measures but 0.95 m. in length and was found

[5] For an illustration of this burial see *The Illustrated London News*, 403, figs. 4–5, Sept. 12, 1953.

some two meters below surface. Its lid was crushed by the weight of earth and broken stones poured over it, but it did not lose its form. On top of it we found 28 knucklebones, *astragaloi* as they were called, and fragments of egg shells. Both are familiar gifts placed in graves of children especially. The *astragaloi* were used in a popular game and the eggs were considered symbolic of regeneration and perhaps of immortality. At the southeast corner of the lid three vases were placed as a parting gift. When the larnax was opened and the earth filling it was removed, its contents came out in dramatic sharpness. The skull was destroyed but the rest of the skeleton was found almost completely preserved. Two small lekythoi were found by its feet, while a number of *astragaloi* were disclosed by its left knee. Along the right temple a miniature bronze strigil came to light, proving that the burial was that of a small boy who was active at Eleusis about the end of the fifth century B.C. Very seldom skeletons of children are preserved at all and often the terracotta larnakes are found empty of bones although they still contain the lekythoi placed in them at the time of the burial.

FIG. 9. Attic amphora of the orientalizing style used for the burial of an infant.

The most common way of disposing the corpses of infants and children was their burial in large vases, in pithoi, and in amphorae. Pointed, wine amphorae were commonly used in the Classical and Hellenistic periods, while larger vases were also employed during the Archaic and the Transitional periods. Within the vessels or by their side were placed small lekythoi, choes, and other small pots useful perhaps to children. As a rule the vases containing the bodies were placed in shallow trenches dug in the earth. Occasionally in the process of digging the trench a prehistoric grave built of stone would be disclosed. Then such a grave would either be emptied of its contents and so used, or enough space would be cleared to accommodate the vase in which the child was laid. In Grave Γ1, we have an example of the latter use; part of a Mycenaean grave was cleared to make room for a pithos burial of the Transitional period—beginning of the fifth century B.C.

The custom of burying children in vessels begins at Eleusis in the Geometric period—in the eighth century B.C.. The earliest example found thus far is burial Γ11. The child, perhaps six or seven years old, was placed in a pithos. The mouth of that vessel was covered by a crater and by it were left two pyxides and a prochous. All date from the first half of the eighth century and interestingly enough they seem to have affiliations with Corinth. In the excavations of 1954 we were fortunate enough to uncover examples from the Archaic period—from the seventh century B.C. One of them must belong to an infant, which was placed in an amphora 0.53 m. in height. After patching and cleaning, the amphora proved to be a brilliant example of the Attic orientalizing style of vase painting (fig. 9). It dates from the last decades of the seventh century B.C. and bears on its obverse or main side a striking representation of a sphinx and on its reverse a lion. On its neck a panther is painted full front in a typical primitive style. The vase can be attributed to the Chimaera painter.

Even more important and interesting is the amphora Γ6, found only 0.25–0.30 m. below the present surface of the soil. The skeleton of a child ten to twelve years old was found in it, proving that the amphora was used as a coffin. The part turned to the surface of the soil is missing; it was destroyed perhaps by ploughs; but

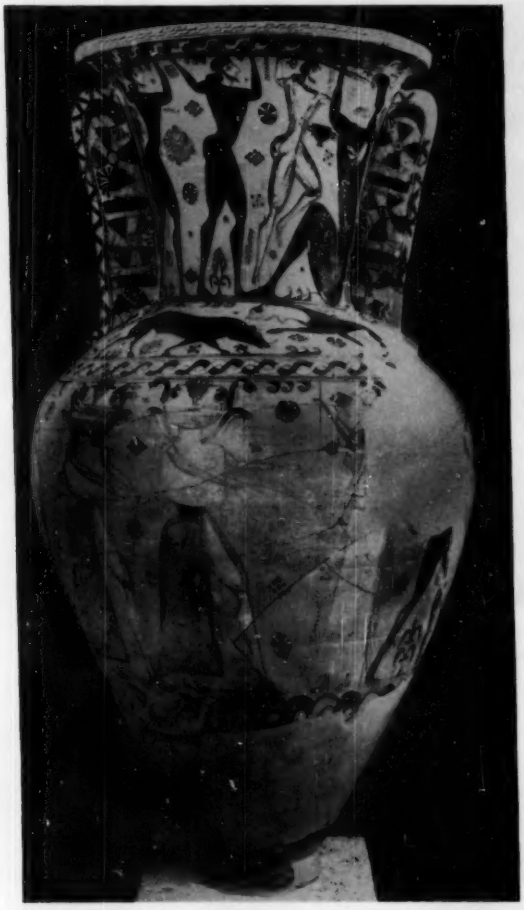

FIG. 10. The unique Proto-Attic amphora from Eleusis. Date—middle of the seventh century B.C.

the greater part of the vase is preserved exceptionally well. The amphora stands fifty-six inches in height and its entire surface is covered with painted decoration (fig. 10). On its neck we have the representation of the blinding of the Cyclops Polyphemus by Odysseus and his companions. A lion attacking a wild boar is painted on the shoulder, while the story of Medusa, the Gorgons and Perseus is depicted on the body. Between the human and divine figures ornaments are painted in the manner usual for the times. To discuss this unique vase fully will be beyond the scope of the present report, but we must note the extraordinary ability of the painter to render the strong, athletic human form, his successful effort to impart the excitement and uneasiness of "wily Odysseus," the agony and pain of Polyphemus, and his fantastic rendering of the heads of the Gorgons framed with serpents, their nimble movement contrasting with the static, xoanon-like appearance of Athena. There can be no doubt that the amphora of Eleusis is the best example known to date of the Proto-Attic style of vase painting and its painter was one of the leading artists of his time, of the middle of the seventh century B.C. His name will remain unknown, but his style recalls that of the Menelas stand. Further study will indicate whether we can attribute to the same painter the vase of Eleusis and the stand at Berlin or any other examples of the Proto-Attic style scattered in the various museums. We may perhaps add that in painting the scene of the blinding of Polyphemus, the artist had in mind the story as told in the Odyssey, 9, 371 ff., but for his Gorgons he had to draw from his imagination, since his effort ante-dates the known representations of the story in art and the oldest literary reference to Perseus' encounter with the Gorgons in Hesiod's *Shield of Heracles* composed about 600 B.C.

The cemetery of Eleusis has not been excavated completely. The important data and the exceptional art objects it has yielded require the con-

FIG. 11. Contents of shaft grave B of Mycenae.

FIG. 12. Contents of shaft grave Γ of Mycenae. The vases against its northeast side were cleaned, patched and placed back in their original position for this photograph.

tinuation of its excavation until its entire area is explored.

Forty-three miles to the south of Eleusis and some fifty-seven miles to the southwest of Athens is Mycenae, the capital city of Agamemnon, the site that was brought again to the attention of the world by the epoch-making discoveries of Heinrich Schliemann, of Chrestos Tsountas, and of Alan J. B. Wace. Within its citadel and immediately to the south of its Lion Gate, Schliemann in 1876 discovered the famous Grave Circle of Mycenae, with its six shaft graves.[6] In 1952 a second Grave Circle was located outside the fortified citadel and some 160 m. west of the Lion Gate. A small segment of the wall of the circle has survived, but there can be no doubt about its existence. The circle enclosed an area about twenty-eight meters in diameter which was used for burials. It was excavated in the summers of 1952, 1953, and 1954 by the Greek Archaeological Society under the combined direction of the ephor of the district, Dr. John Papademetriou, and of myself.[7] A total of twenty-four graves have been found within the area of the circle and to these have been given letters of the Greek alphabet. Of the twenty-four at least fourteen are shaft graves of the type discovered by Schliemann within the fortified citadel. In four of the new shaft graves only one skeleton was found, in six more than one with the maximum of four in grave Γ. Three can be classed as uncertain and one was emptied in antiquity and perhaps in Mycenaean times. The construction of these graves is typical: a rectangular shaft was dug in the earth to the rock and was continued in the rock to the depth required. Along two, or all the sides of the shaft cut in the rock, a wall was erected from the floor to a height of one meter or more. On this wall wooden beams were placed at a short distance from each other; on top of these most often slabs were arranged to form the roof and

[6] For a general discussion of this grave circle and its contents, see Wace, A. J. B., *Mycenae*, 59–63, Princeton, Princeton Univ. Press, 1949.

[7] An advisory Committee composed of Professors A. Keramopoullos, Sp. Marinatos, and G. E. Mylonas was entrusted with the supervision of the excavation. For a summary of the work in 1952, see Mylonas, G. E., and J. K. Papademetriou, The new shaft graves of Mycenae, *Archaeology* **5**: 194–200, 1952.

over the slabs a thick layer of water-resisting clay. Thus, a cavity approximately one meter in depth was formed between the roof and the floor of the grave. The floor was covered with pebbles and on them the body was placed in a more or less extended position. Around it varied kterismata were deposited. After the deposition of the body the roof was placed and then the hole over it was filled with earth, forming on top a low mound. On this a stele was erected. The area of the grave was roughly indicated by stones loosely placed in line. Grave B is a characteristic example of a shaft grave in which one body was found (fig. 11). It measures 2.28 m. in length, 2.60 m. in width and 2.95 m. in depth. Beyond the head and the feet a number of vases were located, while a band of gold was found around the left arm, another over the pelvic area and a broad dagger of bronze over the right elbow. Grave Γ contained four skeletons (fig. 12); the one belonging to the person buried last was found along the western long side of the grave, and occupies almost half its width. Its position with the bent legs and arms is worth noticing. To obtain sufficient room for this burial, the bodies previously interred were pushed toward the eastern side of the grave. The fourth skeleton lies in the area below the feet of the first, second and third, at right angles to them and along the shorter south side. The position of these skeletons seems to indicate that there was no orientation to be followed in the burial of the people interred and this conclusion was verified by the remains uncovered in the other shaft graves. A variety of kterismata were found placed around the bodies and over the grave remnants of stelae were found, but not in position.

FIG. 13. Contents of Grave N: the complete skeleton of the last buried, the bones of the first occupant of the grave brushed to the side and the kterismata found are clearly seen in this figure. Beyond the feet were placed large vases which do not show in this photograph.

FIG. 14. Gold ornaments found on the skull and over the shoulder of the woman buried in grave Y of Mycenae.

In grave Γ the bodies of those buried before were pushed aside in a way that the position of the bones remained almost normal. Maybe this indicates that the burials succeeded each other in short intervals, because in other graves the bones of those buried previously were brushed aside in a manner noted before in connection with the graves of Eleusis and characteristic of the Mycenaean chamber tombs. Grave N, over which fragments of a stele were found in 1952, will illustrate this point (fig. 13). On its floor the skeleton of a warrior was found in a stretched position and with legs and hands bent in a manner similar to that found in grave Γ. Along the side of the skeleton a bronze sword with an ivory pommel

FIG. 15. Crystal bowl found in grave O of Mycenae.

was found and with it knives, which originally were enveloped in cloth. Beyond the feet of the skeleton we find again large vases which originally contained supplies, and to its side brushed against the long north side the bones of the earlier occupant of the grave with his kterismata composed of sword and dagger, a gold cup, gold bands and trimmings.

At least four graves of women are included among the ones contained in the grave circle. One of them, grave Y, excavated in 1954, contained but one skeleton. Over its temple were found gold leaves forming part of a headband kept in place by bronze pins (fig. 14). A gold band was found over her right shoulder; originally perhaps it decorated a braid of hair that fell over that shoulder (*cf. Iliad* XVII, 52). On either side of the skull were found earrings; while beads made of semi-precious stone and rock crystal, which apparently formed a necklace, were revealed among the bones of the neck and under the skull. Around the body were placed a number of vases and among them were found three bronze rings and bronze pins, the head of one of which was of rock crystal.

The most impressive grave of women, however, is grave O, excavated in 1953. Along with the bones was found an assortment of funeral furnishings which can well be compared with those found by Schliemann both in artistic quality

FIG. 16. Detail of the crystal bowl from grave O.

FIG. 17. General view of grave R. In the foreground is the corridor. Beyond the doorway with its triangular upper section is the chamber still roofed over by its poros slabs.

and in numbers. Among these are necklaces of gold and amber, gold bands decorated in repoussé, a rosette of gold leaf, a variety of pins, some of which exhibit a head made of rock crystal, and a unique bowl of rock crystal (figs. 15–16). The bowl is in the form of a duck: the neck and the head of the bird form its handle, its tail is made into a flat spout, while its body is used for the bowl itself. It is carved out of a single piece of rock crystal in an exquisite and sensitive manner and measures 0.135 m. in extreme length.

We may finally mention grave R, excavated in the summer of 1954. It is a large shaft grave

within which, at a later period, was built a unique sepulcher in worked poros stone. It is made up of a long corridor and a chamber, measuring almost three meters in length (fig. 17). Above the second horizontal course its walls batter inwardly in a manner paralleling the tholos tomb construction, so as to form an arched superstructure the top of which, covered by flat slabs, forms its narrow ceiling. Even its floor is paved with large poros blocks tightly fitted together. The joints of the blocks of the walls and ceiling were filled with water-resisting clay and then covered with stucco. Over that were painted broad bands in black and red colors alternatingly, while solid red color covered its arched doorway. Unfortunately, this unique and impressive grave was found empty. Its contents, including the skeletal remains, apparently were removed in antiquity and only a few specks of gold, fragments of pottery, and a carved gem remained for us to find. There can be no doubt that this built grave is later than the shaft grave in which it was placed and whose contents were piled in a corner to make room for the construction. It seems to date from *c.* 1460 to 1400 B.C. and to be contemporary with Wace's second group of tholos tombs.[8]

The exploration of the New Circle of Mycenae has been completed. The graves found within it have yielded a great number of art objects whose study will require time but will shed new light on the artistic activity of the Mycenaeans in the seventeenth and early sixteenth centuries B.C. These include vases, without or with painted decoration, utensils and weapons of copper and bronze, gold bands and other articles of personal adornment, one mask of electrum, three gold cups, one silver cup and many fragments, beads of semiprecious stone and of amber, objects of rock crystal and of paste. These graves have also yielded a substantial amount of skeletal remains, the study of which will add, we hope, considerably to our knowledge of the race of men that raised Mycenae to its role of leadership. These skeletal remains as well as those from the Cemetery of Eleusis are now being studied by Dr. J. Lawrence Angel of the Daniel Baugh Institute of Anatomy in Philadelphia. Until the study of all the objects obtained in the graves is completed, general conclusions are impossible. It can be stated, however, that the New Shaft Graves of Mycenae date from the seventeenth and early sixteenth centuries B.C., that they are the graves of the ruling families of Mycenae, that they have yielded a vast amount of objects and data which will solve a number of problems raised by Schliemann's discoveries in 1876 and they will help determine more accurately the relation of the Mycenaean and Minoan cultures.

[8] *Mycenae*, 16–18.

THE HERITAGE OF THE CLASSICS IN COLONIAL NORTH AMERICA
AN ESSAY ON THE GRECO-ROMAN TRADITION*

RICHARD M. GUMMERE
Curator, Lowell Institute, Boston Public Library

The clime, but not the mind, is changed
By those who over-seas have ranged.[1]

In the period between the first Virginia settlement and the formation of the United States there was without doubt more circulation of ideas and more interaction of conflicting philosophies than is usual in the history of colonies. Several reasons for this intellectual activity will occur to the historian: the responsible founders were, with but one or two exceptions, men with a college training; their motives for colonization were more than merely commercial; and in nearly all cases there was an ideal behind the project. While trading corporations or stock companies played a prominent part, the religious motive was emphasized, and underlying every type of government control was the right of the citizen to the protection of the English Common Law.

A third ingredient, however—the pattern of the Greco-Roman tradition—has been only fragmentarily studied. And it is well worth while to investigate the extent to which this heritage of Western culture has affected the education, the statecraft, the church, the literature, and the art of the North American Colonies from the first settlements to the foundation of the United States.

A vertical glance after the fashion of Mr. Toynbee reveals a continually prominent part played by the classics in the course of human affairs in Western Europe. There is a sort of cultural graph, as conditions change from epoch to epoch. Boethius, the Roman philosopher-statesman, forerunner of medieval thought, along with Orosius the theological historian, helped King Alfred, by his translation of their works, to civilize Wessex. Bede, and Aelfric the abbot of Eynsham, made the Dark Ages less dark by the same transmutation of Christian learning into the lives of a people whose main occupation was war. Alcuin's combinations of classical literature with Scripture saved the empire of Charlemagne from savagery. Ovid's brittle *Ars Amatoria* furnished serious material for the Courts of Love. Vergil became a magician, a sort of Latin Merlin, for the Middle Ages. The Elder Pliny's marvels were a model for the beast-fable and what might be called the biology of those days. Chaucer, with the aid of Seneca and Ovid, made an art out of story-telling, with a moral and a human application.

With the discovery of long-lost manuscripts, the message of Petrarch and the Humanists wakened a world which was sleeping the deep sleep of scholastic formalism. Erasmus thrust his rapier into the heavy paunch of Teutonic pedantry. The classical knowledge of Shakespeare,[2] incorrectly shrugged away by Ben Jonson and many later critics, has been proved to be extensive, if mainly acquired through translations. The Ovidian prefatory lines to *Venus and Adonis*, the accurate burlesquing of the Schoolmaster Holofernes' Latin in *Love's Labour's Lost*, and the essence of North's Plutarch as spread through the Roman plays—these are but a small part of the great dramatist's use of his earlier studies, limited in extent though they may have been. Such interest on the part of the Elizabethans is obvious when one reads over the list of University dramas, and speculates why they fastened on Seneca the Tragedian for their model rather than upon the plays of Sophocles and Euripides. Their expanding empire and their released energies evidently took to the vivid blood-and-thunder as a better medium of entertainment for both sparks and groundlings.

* Research for this project was carried out with the aid of a grant from the American Philosophical Society.

[1] Horace, *Epistles*, I.11.27, *Caelum, non animum, mutant qui trans mare currunt.*

[2] Thomson, J. A. K., *Shakespeare and the classics*, London, Allen and Unwin, 1952. Eliot, T. S., *Selected essays*, 6, New York, Harcourt, Brace and Co., 1932: "Shakespeare acquired more essential history from Plutarch than most men could from the whole British Museum."

Montaigne, throwing overboard certain formalities, based his Essays on Plutarch and Seneca: "dipping into them as into a never-exhausted well"; "He found himself in the men of old time; his discovery had been not how much and how strange there was in them, but how much of 'him' had been in other men."[3] Long after Montaigne, the author of *Moby Dick* felt likewise. On January 26, 1854, Herman Melville sends his brother Tom a copy of *Seneca's Morals*, saying: "This is a round-of-beef where all hands may cut and come again." Horace is a canon for Boileau and Pope; Byron's readers will remember that he curiously regarded his own *Hints from Horace* as one of his best works. The development of the Pindaric ode-form from Dryden to Wordsworth, and the Ciceronian perfection of oratory in the speeches of Burke and Pitt, or the writings of Johnson and Gibbon, are convincing proofs of the utility and the "applied" charm of the ancient languages. The Noble Savage motif, so prevalent in the eighteenth century, harks back to classical writings on the Golden Age. This is primitivism assumed for an artistic purpose.[4]

Winckelmann in archaeology and Goethe in the ideas suggested by archaeology liberated the German mind from a vast lumber-room of unassorted ideas. A curious piece of research was undertaken by William Penn, in the writings of the ancients and especially the pre-Socratic philosophers, for corroboration of his belief in the Indwelling Spirit of the Quakers. The French Revolutionists seized upon Roman pagan symbols, and plastered them over the art, the calendar, and the government of the New Regime. Mention Emerson, and Plato comes at once to mind—a comparison noted by Herman Melville who regards the Concord sage as a true "thought-diver" like his Greek predecessor and in complimentary slang calls him "a Plato who talks through his nose."[5] Today, besides a large proportion of magazine verse devoted to Greek themes, the tragedies of Robinson Jeffers and Eugene O'Neill[6] are starkly Hellenic. O'Neill, while planning *Mourning Becomes Electra*, asked himself certain preliminary questions: "Is it possible to get modern psychological approximation of Greek sense of Fate into such a play?" "The Furies within Orestes" would correspond to "Puritan sin and punishment." "Work out this symbol of family resemblances." Similarly, T. S. Eliot stated that he had in mind the Orestes myth of Aeschylus when he wrote *The Family Reunion*, and the Alcestis of Euripides while developing the plot of *The Cocktail Party*.[7] The modern counterparts of these classical characters are, like their originals, driven on by Ἀνάγκη, Necessity, or by remorseless Destiny.

Nietzsche's "polarities" were the myths of Dionysus and Apollo. Surprisingly enough, the radicals, Marx and Lassalle, began their writing careers with studies in the early Greek philosophers. The secret of it all is the transmutation which takes place under the inspiration of the old material. These changes on the historical "graph" indicate progress rather than mere return to antiquity. Boccaccio, with[8] "The Ciceronian cadences of his almost Latin prose," and Balzac the Elder clarified the obscurities of their predecessors. Lessing was particularly active: he translated Charles Rollin's *Histoire Ancienne*, pointed out the relation of poetry to art in his *Laocoon*, and brought Greek drama into speaking acquaintance with the modern stage. Matthew Arnold is much more naturally classical in his Thyrsis-elegy than in the tragedy, *Merope*, which he wrote as Professor of Poetry at Oxford. The latter is an artificial attempt to reproduce a Greek drama as closely as possible, with no adaptation to the modern stage. Charming as are Walter Savage Landor's Latin verses, they are a glorious photograph of antiquity, and not an original design.

The essence of the classical role is its variety as well as its continuity. In the famous debate between the Ancients and the Moderns, Fontenelle summed up the situation: "A really cultivated mind is made up of all the minds of pre-

[3] *London Times Literary Supplement*, March 16, 1933, on the occasion of Montaigne's 400th anniversary. For Melville, see note 5.

[4] Fairchild, H. N., *The noble savage*, New York, Columbia Univ. Press, 1928. Lovejoy, A. O., and Boas, G., *Primitivism and related ideas in antiquity*, Baltimore, Johns Hopkins Univ. Press, 1935.

[5] Metcalf, Eleanor Melville, *Herman Melville, cycle and epicycle*, 58–59, and 150, Cambridge, Harvard Univ. Press, 1953. Gilman, W. H., *Melville's early life and Redburn*, 167 and n., New York Univ. Press, 1951.

[6] Alexander, Doris M., Psychological fate in Mourning becomes Electra, *Pub. Mod. Lang. Assoc.* **68**: 923–934, 1953.

[7] Viscount, Samuel, Presidential address to the British Classical Assoc., 1953. Heilman, R. B., Alcestis and the cocktail party, *Comparative Lit.* **5**: 105–116, 1953.

[8] Chubb, T. C., *Life of Giovanni Boccaccio*, 17, London, Cassell, 1930.

ceding ages."[9] If one desires older testimony, there is the saying of Seneca: "Men who have made these discoveries before us are not our masters, but our guides."[10] The touchstone of the whole process is the availability of the old material for current application. The *presence* of the past is as important as its *pastness*.

Certain questions need to be asked, and answered. What was the refraction, rather than mere imitation or reflection, of Greek and Roman literature? How did John Winthrop handle the stuff of the ages? Or John Adams? What explains the rising tide of interest in this field as applied to politics, from John Wise of Ipswich to the minute investigations of James Wilson and Madison? Why did Philadelphia from the start turn more extensively to *belles-lettres*, with James Logan and Franklin in the lead? Why was Virginia, in contrast with New England, uninhibited in the use of the classics? How did the religious attitudes in these two regions differ from each other? We may draw many conclusions from the "little men," the almanac editors, the newspaper quill-drivers, the scattered sermons, the occasional pamphlets on all sorts of subjects, and the vast correspondence which is the joy and the despair of the historian. More may be learned from the diaries of William Byrd of Westover and Samuel Sewall of Boston about the effect of all these classical volumes than from many of the "head-liners." The prime factor from the Greco-Roman tradition is its incorporation into a new concept of government, fitted to the needs of a new era. Its very strength resulted from its readiness for assimilation into the current of history.

If we try to follow a similar vertical "graph" within the American colonies, from the first settlements to the beginnings of a nation, we shall find manifold variations, and indeed will be compelled to look horizontally as well as vertically. The tough and complicated seventeenth century irons out into the clearer age of the Enlightenment, as men's minds become more flexible. There is little specialization: the clergyman was often a politician, the statesman a lover of *belles-lettres*, and the collegian an imaginative explorer in many fields. Roger Williams, for example, strikes the reader as even more interested in the science of government than in the realm of theology. The reaction to the classics thus appears as a two-way journey through the colonial mind. The botanist Bartram turns out to be a Platonist. The New York lieutenant-governor, Cadwallader Colden, was not only a practising physician but a naturalist and a philosopher. The framer of the Declaration was an expert in classical architecture, as indeed in almost every branch. The "mixed aristocratie" upheld by John Winthrop in the Puritan regime is altered almost beyond recognition in the "mixed government" of the Constitution-makers. The "State of Nature," an ancient condition described by Aristotle and Cicero, meant one thing to Hobbes with his doctrine of the Supreme Ruler, and another to Sam Adams and his Sons of Liberty. The early Colonial saddle-bag doctor and his nostrums inherited from the Elder Pliny is a different person from the classically-trained Philadelphia physician of the late eighteenth century. The nervous Juvenalian satire of Freneau stands in contrast to the routine mythology of the first experimentors.

The stress and strain, the physical struggle necessary for conquering a new environment, are not conducive to the circulation of original ideas in the earliest days of a colony. Techniques of living, methods of governing, call for adjustment. But codes, *mores*, symbols, beliefs, and superstitions maintain themselves as much as possible along the old lines of premigration experience. Even the savage would throw away his stone knife and use a gun or manufactured tool after traffic with a trader; but he would on no account reject a religious practice or a tribal custom.[11] Similarly, the colonist would retain all the available heritage of the past, in so far as his frontier permitted. Church, law, education, books, and art were permanent possessions which went across the Atlantic with him in the cockle-shell vessels of the seventeenth century: they varied as little as possible from the home tradition. And in cases where the reason for leaving the British or European scene was either more liberty or a search for elbowroom, the geographical change did not mean any immediate alteration in the "imponderables." It is significant that, of the forty-five Harvard graduates up to 1650, twenty-eight went back to take positions in England, most of them permanently.[12] A French critic

[9] *Digression sur les Anciens et les Modernes*, in his debate with Boileau.

[10] *Epistles*, 33.11.

[11] Folsom, J. K., *Culture and social progress*, 22–24, New York, Longmans, 1928. Wissler, C., *Man and culture*, 34, 119, New York, T. Y. Crowell, 1923.

[12] Connely, Willard, Colonial Americans in Oxford and Cambridge, *The American Oxonian* **29**: 6–17 and 75–78, 1942.

wrote of the North American colonials: "An American is not an American American, but an English American, retaining, though at a distance from his country, the viewpoint, the activities, and the practices which mark him off from other Europeans." [13]

The prevalence of this "Look Homeward, Angel!" motif is indicated by the continual appearance of Greco-Roman forms of expression. An old wood-cut [14] portrays George Sandys, translator of Ovid's *Metamorphoses*, one of the first Jamestown adventurers and the first literary man to do his work on the new continent, lying in meditation on a Virginia beach, holding a volume of the Latin poet. His costume is complete, with doublet and hose; and a ship, the reminder of home, lies in the offing, under full sail! It is a case of England in the New World. In 1699 an orator at William and Mary College, with the old metaphors still on his mind, prophesied that Virginians would soon be able to converse with the most excellent men of all ages, with Plato, Aristotle, Seneca, Cicero, Livy, Tacitus, embodying the later advice of Jefferson for all young men to acquire a classical training.[15] This theme creeps into official documents: An appeal to Governor Nicholson in 1704 by the vestry of St. John's Parish, King William County, protests against the high-handed ways of a certain clergyman, "as if we had either a Nero, a Trajan, or Dioclesian (*sic*) for our Govern'r Rather than one of the most satisfactory Rulers that ever Governed this Country." [16]

The comments of Edmund Randolph, who has left fragments of a proposed history of Virginia, indicate the same habit among the Founding Fathers.

> George Wythe is said to have been indebted to his mother for the literary distinction which he attained. But it is more probable that she was by chance capable of assisting him in the rudiments of the Latin tongue, and that he became a scholar by the indispensable progress of his own industry. . . . Mr. Wythe not only laboured through an apprenticeship but almost through a life in the dead languages. In his pleadings at the bar, it was a foible to intersperse such frequent citations from the classics. But he argued ably and profoundly.[17]

It was easy to slide into bombast in describing Patrick Henry's "Liberty or Death" speech, as Judge Tucker did:

> Imagine to yourself this speech, delivered with all the calm dignity of Cato of Utica; imagine to yourself the Roman Senate assembled in the Capital when it was entered by the profane Gauls. Imagine that you had heard Cato addressing such a Senate! [18]

This was a picturesquely inaccurate bit of patriotic eloquence. At Williamsburg where the education of Indians had, as elsewhere also, not been a success, and where English fashions ruled, the earliest minutes of the Phi Beta Kappa Society included debate-topics such as these: "Whether Brutus was justified in having his son executed," "Whether Commonwealths or Monarchies are most subject to seditions and Commotions," "Whether an Agrarian Law is consistent with the principles of a wise republic."

Such utterances are straws in the wind which indicate that old-world education reproduced itself on the Atlantic seaboard with little change. Our first school followed the program of Westminster in London; our first college, with its classical curriculum, stood on even terms—*ad eundem gradum*—with Cambridge, Oxford, and Edinburgh. The Pennsylvania-German higher training, mostly theological, for all the heroic frontier mission-work of a Muhlenberg, went back for its instructions to a European source, ecclesiastically to the church authorities, intellectually to the Göttingen program. Candidates were examined for their knowledge of Latin, even though their parishes were to be in the back woods. How far the Latin required of the Lutheran clergymen in the early days of Lancaster County was put to use is a matter for discussion; but the Muhlenbergs regarded it as vital. The father had wound up his training with Greek, Hebrew, Logic, Mathematics, Dogmatic and Moral Theology before embarking for America; his son Ernest went back to Halle for the same program; and another son, later a member of the Continental Congress, amused himself by writing a burlesque poem in Latin and German for his broth-

[13] De Pradt, DuFour (Archbishop of Malines), *Des Colonies et de la révolution actuelle de l'Amérique* **2**: 355, Paris, Bechet, 1817.

[14] Shurtleff, H. R., *The log cabin myth*, 198, Cambridge, Harvard Univ. Press, 1939.

[15] Wright, L. B., *The Atlantic frontier*, 87, New York, Knopf, 1947.

[16] *Virginia Mag. Hist. and Biog.* **8**: 369, 1901.

[17] *Ibid.* **43**: 131, 1935; also Anderson, D. R., The teacher of Jefferson and Marshall, *So. Atlantic Quart.* **15**: 326–343, 1916.

[18] Henry, William Wirt, *Patrick Henry, life, correspondence and speeches* **1**: 264–265, New York, Scribners, 1891.

er's edification.[19] Increase Mather held degrees on both sides of the Atlantic, and was equally welcome in pulpit and council chamber. William Byrd the Second of Westover received nearly all his education in England; he was a Virginian in the Colonies and an Englishman in London.

This education, which came overseas and was the base of all grammar-school and college curricula, furnished testimony with which all sorts of problems could be solved. It consisted of the old *trivium* of rhetoric, logic, and grammar, and the *quadrivium* of arithmetic, music, geometry, and astronomy. These had been known for centuries as the "liberal arts." With the exception of music,[20] this program held on through the seventeenth and eighteenth centuries, with the gradual addition of a few more modern subjects. The basic level of the clergyman's studies was the ancient languages. With reliance on the same background, the literary man found it difficult to produce anything original. But the culmination of the American ideal in politics and government, as interpreted by Jefferson, Adams, and others of the Founding Fathers, reflected in great part the law givers and historians of Ancient Greece and Rome. A careful reading of the writings, speeches, and correspondence of the pre-Revolutionary protagonists indicates a fundamental connection between the classics and their theories of popular sovereignty, natural law, "compact," reason, and the rights of man.[21]

An early sample of an appeal to the past as a warning was the fear, in theocratic New England, of the soldier on the throne. This fear was felt not only by those who had read leisurely in translations of Plutarch but by scholars who had searched Tacitus or Thucydides in the original tongues for illustrations. Cotton Mather tells us[22] that his grandfather, John Cotton, was worried over the possibilities of military domination. On his arrival in New England, he found that "very much of an Athenian democracy was in the mould of the government, by the royal charter," and he consequently got it enacted that only church members should be electors, making it a theocracy like that of Israel. John Winthrop, partner with John Cotton in the "wilderness Zion," wrote in his journal in 1638:

> Divers gentlemen and others, being joyned in a military company, desired to be made a corporation. But the Council, considering (from the Pretorian Band among the Romans and the Templars in Europe) how dangerous it might be to erect a standing authority of military men, which might easily in time overthrow the civil power, thought fit to stop it betimes.[23]

That this same fear dwelt continually in the minds of statesmen is proved by Madison's letter to Jefferson, in August of 1791: "The stockjobbers will become the Pretorian Band of the Government."[24] The Puritans worried in the early stages over possible inroads of the democratic idea, a hesitation which Sam Adams would never have felt. The election sermon of Nathaniel Ward, preached in 1641, displeased Winthrop, who wrote:

> He grounded his arguments upon the old Roman and Grecian government, which sure is an error; for if religion and the Word of God makes men wiser than their neighbors it is probable that we may better frame rules of government to ourselves than to receive others of those heathen commonwealths.[25]

Ward, however, won half the battle: for the *Body of Liberties,* approved after many committee meetings, indicates that "Moses his Judicialls" was superseded by a more democratic interpretation of the Divine Law.

What a contrast with conditions a century and more later, when a line or two from Adams or Otis in the *Boston Gazette,* and an allusion to "the good old Romans" or an illustration from Livy or Tacitus or Thucydides, couched in modern terms, would not only set the Sons of Liberty afire but would echo down the Atlantic seaboard! Not only as a rebellion motif, but as a deep-seated fundamental element in the Constitution as James Wilson saw it, the Divine Law made for true republican government. Cicero after all hit the nail on the head: "Nothing is more wel-

[19] Wallace, Paul A. W., *The Muhlenbergs of Pennsylvania,* 2, 75, 196, Philadelphia, Univ. of Penna. Press, 1950.

[20] *Music,* in the Greek sense, included everything in the curriculum of a mental or spiritual nature; the bodily training was γυμναστική.

[21] For the development of these ideas between the Middle Ages and the American Colonial period, the reader should consult McIlwain, C. H., *The growth of political thought in the west,* New York, Macmillan, 1932; *Constitutionalism, ancient and modern,* Ithaca, N. Y., Cornell Univ. Press, 1940; *The American Revolution, a constitutional interpretation,* New York, Macmillan, 1923.

[22] *Magnalia* 1: 266, S. Andrus, Hartford, 1855.

[23] Winthrop, John, *Journal,* ed. J. K. Hosmer, 1: 260, New York, Scribners, 1908.

[24] Koch, Adrienne, *Jefferson and Madison,* 120, New York, Knopf, 1950.

[25] Winthrop, John, *Journal,* ed. J. K. Hosmer, 2: 36–37.

come to the Godhead of the universe than councils and gatherings of men which are united by the sanction of the law." [26]

In Virginia, while the Anglican church and the state were no less closely allied than the theocratic and civil authorities in New England, the struggle centered upon other grounds. The classics, though less in evidence as to amount of written material, had a clear field. Governor Berkeley, in the give-and-take turbulence of the Bacon Rebellion, might be said to have had a Pretorian guard all his own, although he was recalled in the end because of his arbitrary actions. And Nathaniel Bacon, a Cambridge man, fought the old Oxford tyrant in Roman style, with an army of sympathizers. The "genteel tradition" here was a sort of window-dressing. Bacon is pictured haranguing his troops in the manner of Livy or Thucydides: [27]

> Gentlemen and fellow-soldiers! How am I transported with gladness to find you thus unanimous! You have the victory before you fight, the conquest before the battle; your hardyness shall invite all the country along as we march to come in and second you.

This style is maintained in a current poem honoring the late rebel:

> Mars and Minerva both in him concurr'd
> For arts, for arms, whose pen and sword alike,
> As Cato's did, may admiration strike
> Into his foes.

But just before the Revolution, in this same Southern region where Berkeley had imitated a Roman proconsul, and had thanked God that there was no printing press and but few schools in his province, there were close partners of the Boston Liberty Boys. Mr. Timothy, editor of the South Carolina Gazette, indignant over the new tax, is thus recorded by John Rutledge:

> Mr. T. was so breathless he ran out of English, and imported a font type in the Greek alphabet and used it liberally, with thoughtful translations, so that anyone could know what had happened to the tyrants of Syracuse and Sparta; Mr. Gadsden was also breathless about it, in Latin and Hebrew as well as English.[28]

There were occasional revolts by New England clergymen against the over-emphasis of this classical learning. The good Thomas Hooker, a founder of Connecticut, complained:

> I have sometimes admired [i.e., *wondered*] why a company of Gentlemen, Yeomen, and poore women that are scarce able to know their A.B.C. have a minister to speake Latine, Greeke, and Hebrew, and to use the Fathers, when it is certain they know nothing at all: they goe to hell hood-winckt.

Hooker's contemporary, Richard Mather, may have been more considerate; for "he avoided an unnecessary citation of Latin sentences." [29] In Connecticut also, just before the Revolution, John Trumbull lamented that there were too many "dry Numas" or "empty Cicero's" under conditions where students

> Read ancient authors o'er in vain,
> Nor taste one beauty they contain,
> And plodding on in one dull tone
> Gain ancient tongues, and lose their own.[30]

When reading the printed language of the Colonials, from the first settlements to the dawn of Independence, one finds many words whose meaning is nearer to the Latin derivation. In some cases the effect is strained, in others natural. More than two hundred such words are now archaic, but in those days normal. An extreme sample is Milton's "Bridge built by wondrous art pontifical," [31] where the last word refers neither to the Pope nor strictly to a Pontifex Maximus, but is simply a throwback to the plain *pons* and *facio* of the Romans. In America, Anne Bradstreet, the "Tenth Muse," hails the sun, who "torrifies us with his fervour." Nathaniel Ward, author of "The Simple Cobbler of Agawam," whimsically piles up expressions like *nugiferous* (nonsensical) and *quisquilian* (odds-and-ends). Cotton Mather's old schoolmaster, Elijah Corlet, gave him some advice about a possible cure for his stammering: "Oblige yourself to a *dilated deliberation* in speaking." John Wise uses *ingenate*, and *incautelous* ("careless"); vivid,

[26] Wilson, James, *Works*, ed. Bird Wilson, 1: 210, Philadelphia, Bronson and Chauncey, 1804. Cicero, *Pro Balbo*, 13, and *Somnium Scipionis*, 3. For Wilson's extensive use of the ancient material, see Gummere, R. M., Classical precedents in the writings of James Wilson, *Trans. Colonial Soc. Mass.* **32**: 525–538, 1937.

[27] Narrative of Bacon's rebellion, *Virginia Mag. Hist. and Biog.* **4**: 142, 1896. Hiden, Martha W., Latin in colonial Virginia, *Classical Weekly* **22**: 41–45, 1928.

[28] Barry, Richard, *Mr. Rutledge of South Carolina*, 97, New York, Duell, Sloan and Pearce, 1942.

[29] Murdock, K. B., *Literature and theology in early New England*, 49, Cambridge, Harvard Univ. Press, 1949.

[30] *Poetical Works*, 2 v., Hartford, Goodrich, 1820; from his *Progress of Dulness*.

[31] Highet, Gilbert, *The classical tradition*, 159, Oxford Univ. Press, 1949. From *Paradise Lost*, 10.312.

though not obscure, he loads in the Greek rhetorical terms of his college days; he substitutes the ancient word *prosopopoeia* for "personification." This was current practice on both sides of the Atlantic: John Evelyn, in a letter to Pepys, requests that he investigate in Tangier "the citrine-trees that of old grew about the foote of Mount Atlas, and were heretofore *in deliciis* for their *politure* (smoothness) and natural *maculations*" (spots of color).[32]

It was natural that men whose compulsory language in college was Latin, and whose frame of speech was based on Latin, should carry over this style into their communications. Some of these words are still in use; but most of them are rare or obsolete. The King James charter of 1606 gave to Sir Thomas Gates and others authority to "*deduce* a colony of our people into that part of America commonly called Virginia." A diary entry of John Winthrop reports: "Mr. Thomas Makepeace, because of his *novile* disposition, is informed that we are weary of him unless he reform."[33] The eighteenth century, especially in the political field, ran in a verbal direction which was Johnsonially classical. *Notify* (make a *thing* public); *subduction* (now rare, frequent in those days); *oppugnation* (rare except for certain "full-dress" occasions); *dehort; illustration,* for "distinction"; *exauctorate* (disqualify); *irritament* (last used, according to the *New English Dictionary,* by Gladstone in 1844!). There are changes in meaning: *imbecility* ordinarily signifies weakness of body or circumstances rather than of mind. To us *security* means either "safety" or "guarantee"; to the Colonial it meant "freedom from worry." On his voyage home from England in 1755 the Reverend Samuel Davies meditated happily on "*complacential* surveys of divine things."[34] The word "faculty" seems innocuous today; but it had a special meaning in economic circles—the relative ability of the citizen to meet his tax assessments.[35] Few of these words would be misunderstood now; but few of them would be current.

We must be careful to distinguish these Latin-laden expressions from technical terminology. In the case of William Bartram's travel journal in the South, he speaks the language of science when mentioning *panicles* and *lingulate* leaves. It is a different usage when he describes the *fulgour* of the lightning or writes as follows in his diary: "The pain in my eyes subverted the plan of my peregrinations." The quaint rule for college students who were forbidden "to frequent the company of such men as lead an *ungirt* (Latin *discinctus*) and dissolute life" is a reminder of the carefully careless fops in Rome who were ostentatious in their negligé.[36] A letter to England from beleaguered Boston in August of 1775 complains: "Have you forgot us, or are you *fascinated?*" This means *bewitched,* and is a reference to the evil eye.[37] A clever bit of manufacture is evident when the clergyman, Charles Wolley, teases the easy-going Dutch, who like to ride about New York instead of walking, and are devoted to *aurigation* (the chariot fashion).[38]

These types of expression are natural to the period. But the classical habit is carried to an absurd degree of pedantry by Dr. John Hubbard. in his *Epithalamium:*

> Sing spousals, those who *olim* sang
> For joy at the Creation's birth![39]

"Sometime" would have done perfectly well; but the good Doctor preferred an exotic expression. The depths of second-hand artificiality and imitation can be plumbed by one who reads any collection of early American verse.[40]

Our Colonial ancestors, because of their predominatingly classical program in the schools and colleges, spent little time arguing about the value of the ancient languages[41] for mental training or as a tool for vocational purposes. The enlargement of the curriculum came by degrees, and any objectors to the old system based their pleas on the addition of sciences and modern languages

[32] Howarth, R. G., ed., *Letters and the second diary of Samuel Pepys,* 154, London and Toronto, Dent, 1932.

[33] Winthrop, John, *History of New England,* ed. J. Savage, 1: 347–348 (footnote), Boston, Little, Brown, 1853.

[34] Foote, W. H., ed., *Sketches of Virginia* 1: 279, Philadelphia, W. S. Martien, 1850.

[35] Upton, R. F., *Revolutionary New Hampshire,* Hanover, N. H., Dartmouth College Publications, 1936. Note the old terms "Prudentials," "Judicials," and the "Biologicals" which still decorate many a drug-store window.

[36] Morison, S. E., *Three centuries of Harvard,* 29, Cambridge, Harvard Univ. Press, 1936.

[37] Willard, M. W., ed., *Letters on the American Revolution,* 205, Boston and New York, Houghton-Mifflin, 1925.

[38] Wolley, Charles, *A two years' journal in New York,* 60, New York, W. Gowans, 1860. Written in 1701.

[39] Stiles, Ezra, *Itineraries,* 504, ed. F. B. Dexter, New Haven, Yale Univ. Press, 1916.

[40] E.g., Kettell, S., *Specimens of American poetry,* 1, Boston, Goodrich, 1829.

[41] As in the writings of Sir Richard Livingstone, or Roscoe Pound's The Humanities in an Absolutist World, *Classical Jour.* **39** (1), 1943.

rather than upon any desire to exclude the standard studies. As a cultural background for linguistics, literature, and government, the *status quo* was regarded as adequate. The Greco-Roman medium of expression was so natural to the educated men along the Atlantic seaboard that literal parallels with ancient Rome or Athens were not consciously worked up nor were comparisons continually drawn between the institutions of the past and those of the present. They were simply taken for granted as current material for daily use and illustration.

It is for this reason that the famous *Querelle des Anciens et les Modernes*[42] was a mere side issue to the colonists. It is touched upon from time to time, but never hotly debated as it was by Boileau versus Perrault, or Arnold versus Huxley, or by academic folk during the first quarter of the twentieth century. For the provincials, liberal arts and sciences went hand in hand. Addison and Pope, popular always as modern masters, were looked upon with high favor for leisure reading, allowing the ancient languages first place for serious purposes. John Trumbull complained only because his classics were taught him in such dry and detached fashion. Franklin's efforts in science cooperated in every way with the liberal arts, although the scientist of his day was an independent experimenter rather than a member of a laboratory group. John Winthrop, Junior, Governor of Connecticut, was master of both the library and the laboratory.[43] Traces of this *Querelle* occasionally appear incidentally: it is significant in the story of American literary criticism that Philip Freneau, defined by many as the first real American poet, chose as his graduation thesis at Princeton in 1771 the affirmative of the subject: "Does Ancient Poetry excel the Modern?" The combination of Plato, Newton, and Locke in the development of the philosophy of Jonathan Edwards is proof enough of the partnership.

Much ink has been wasted over the question whether the pre-Revolutionary writers confined their attention to the ideas of Harrington (*Oceana*), Montesquieu (*Esprit des Lois*), Locke (*On Civil Government*), and others of the modern interpreters of government, or whether they went primarily to the classical sources. Documentary evidence proves that they were comfortably familiar with both. Educationally, they were at home in Latin—Adams and Jefferson especially. School textbooks were in Latin as well as about Latin.[44] In the two earliest colleges, Latin was supposed to be spoken on all occasions except recreational and outside contacts. Fewer kept up their Greek; but the historians and philosophers were widely read in translation.

This familiarity with the ancient languages did not detract in any way from the careful study of contemporary authorities. When Roberdeau writes from York (he calls it "Yorktown") in November, 1777, to Thomas Wharton at Lancaster asking for copies of Vattel, Pufendorf, and Grotius, presumably for use by the Committee on the Convention of Saratoga, there is no thought of displacing ancient ideas, but rather a desire to supplement the machinery of treaty making by means of some up-to-date literature on the subject, or standard commentaries current in Europe.[45] It should also be remembered that the idea of representation as well as the theory of checks and balances was not only correlated with the current studies of the Colonials, but traced back to the ancient sources. The doctrines of Aristotle were well known to the Colonials long before Montesquieu lifted the sixth book of the *Politics* into his *Esprit des Lois*. Such men were at home in Cicero, Tacitus, and Thucydides; many of them were able also to read their Greek in the original. A careful search in law-makers like Nathaniel Ward or in the studies of Wilson and Madison preparatory to the debates on the Constitution indicates a first-hand knowledge, on the part of the twenty-four college-bred delegates, of the Aristotelian arguments for a "mixed" type of government. The Reverend Ebenezer Parkman, of Westboro, Massachusetts, bought copies of Montesquieu and Bishop Hoadley's "Measures of Submission to the Civil Magistrate," in order to sharpen himself up for a Sunday sermon on the subject of liberty, with a hint for independ-

[42] Charles Perrault's picturesque dialogue was published at Amsterdam in 1693. For some of the widespread debate, see Marburg, Clara, *Sir William Temple*, New Haven, Yale Univ. Press, 1932.

[43] Morison, S. E., *Builders of the Bay Colony*, 269–288, Boston, Houghton-Mifflin, 1930. For the wide range of Puritan reading, *ibid.*, *The Puritan Pronaos*, 127–147, New York and London, N. Y. Univ. and Oxford Univ. Presses, 1936.

[44] Norton, A. O., Seventeenth century Harvard textbooks, *Publ. Colonial Soc. of Mass.* **28**: 360–438, 1933. Chinard, G., Polybius and the American Constitution, *Jour. Hist. of Ideas* **1** (1), 1940. Dunning, W. A., *History of political theories ancient and medieval*, 118, New York and London, Macmillan, 1902.

[45] Burnett, E. C., *Letters of members of the Continental Congress* **2**: 547, Washington, D. C., Carnegie Inst., 1923.

ence.[46] A glance through the works of John Wise (1652–1725) will reveal that his application of the Law of Nature to the government of the New England churches is a balanced compound of Pufendorf with a sheaf of illustrative material taken from the Greek and Roman writers. Bickerstaff's Almanac for 1769 declared that "Locke and Sidney revived the spirit of the ancient republics."

Jefferson, when asked for information regarding the sources of the Declaration, replied: "I know that I turned to neither book nor pamphlet while writing it. All its authority rests on the harmonizing sentiments of the day, whether expressed in conversation, in letters, printed essays, or the elementary books of public right, as Aristotle, Cicero, Locke, Sidney, and others." "Whig principles," declared John Adams, "were the principles of Aristotle and Plato, of Livy and Cicero, and Sidney, Harrington, and Locke:" the principles of nature and Eternal Reason. Jonathan Mayhew in 1766 had stated the case clearly enough: "Having been initiated, in youth, into the doctrines of civil liberty as they were taught by such men as Plato, Demosthenes, and Cicero among the ancients, and such as Sidney, Milton, Locke, and Hoadley among the moderns—I liked them; they seemed rational."[47]

Volumes could be written with lists of quotations from the ancients. Cotton Mather's industry in this line would be a stupendous task to record; he wrote all his sermons, essays, and his voluminous *Magnalia Christi* with classical authors spread out before him awaiting the excuse for quotation.[48] This is instructive and cumulatively impressive; but we are more interested in the reverse process—what was the *refraction* rather than the *reflection* of this material on the Colonial Mind. The resulting activities are more significant than the comparative details. This was pointed out by Gouverneur Morris, to whom the Constitution is indebted for its logical and convincing form: we should steer clear, he wrote,[49] of too many rules in our government, which would produce "the same pedantry with our young scholars just fresh from the university who would fain bring everything to a Roman standard." The period in which all this took place was especially appropriate for such ideas. The Age of Enlightenment lay halfway between the Absolute or authoritarian system, and our later realistic and comparative approach.[50] Without being utilitarian in the ordinary sense of the word, the classics were ripe for service in terms of adaptation to the circulation of new ideas and effective ways of expressing them. The culmination of the American Colonial period is a milestone along the historical road, from King Alfred to the Augustan age in England.

Most convincing of all are diaries and memoranda. Richard Lee the Second, of Virginia, a graduate of Oxford, wrote his private notes in Greek, Latin, and Hebrew: his library included Florus, Orosius, Corderius, Homer, Horace, Lucian, Vergil, Ovid, Cicero. It was said of another Virginian by the mother of his inamorata, that "until he understands Latin he will never be able to win a young lady of family and fortune to his wife." For this reason, the young man immediately employed a tutor![51] Light-Horse Harry Lee, old and ill, remembered his prize-winning Latin Essay at Princeton, and sent his son a consignment of classical books for college reading, with the advice to imitate great and good men —Lycurgus, Solon, Numa, Hannibal" (*sic!*). William Byrd, Samuel Sewall, John Adams, and many others devoted a fixed daily period to the reading of Greek and Latin authors. Byrd proposed to his second wife in Greek, with the humorous request that she reply in English! Sewall's Latin verses were numerous, and often ingenious. James Logan wrote in Latin on botany, and published from the press of Benjamin Franklin a translation of Cicero's *De Senectute*. Jefferson's marginal annotations in his favorite Cicero are well known to bibliophiles.[52] James Otis's first work was a textbook on Latin prosody; James Wilson, a Scottish university graduate, taught classics in Philadelphia before taking up the law; Jonathan Boucher, the fiery Tory

[46] Baldwin, Alice M., *New England clergy and the Revolution*, 95, Durham, N. C., Duke Univ. Press, 1928.

[47] Chinard, G., *Thomas Jefferson the apostle of Americanism*, 63, etc., Boston, Little, Brown, 1929. Becker, Carl L., *The Declaration of Independence*, 75, 247, 263, 25, etc., New York, Knopf, 1942. Adams, John, *Novanglus papers*, no. 1, Jan. 23, 1775. Mayhew, Jonathan, *The snare broken*, 39–41, Boston, Draper, 1766: a sermon on the repeal of the Stamp Act.

[48] Murdock, K. B., *Cotton Mather*, xxvii, xxx, New York, Harcourt, Brace, 1926.

[49] Morris, Anne C., ed., *Diary and letters of Gouverneur Morris*, 1: 114, New York, Scribners, 1888.

[50] Stromberg, R. N., History in the eighteenth century, *Jour. Hist. of Ideas* 12: 295–304, 1951. Ferguson, W. K., The interpretation of the Renaissance, *ibid.*, 486–494, 1951.

[51] Hendrick, B. J., *The Lees of Virginia*, 28, 31, 52, 85, 93, Boston, Little, Brown, 1935. Boyd, Thomas, *Light-horse Harry Lee*, 336–337, New York, Scribners, 1931.

[52] Sowerby, E. M., ed., Catalogue of the library of Thomas Jefferson (vv. 1 and 2), Washington, D. C., 1952.

parson, was a highly successful schoolmaster, with George Washington's stepson as a pupil.

It is clear that during the Colonial period, irrespective of the ratio of literacy, the general standard of intelligence was high. The old almanacs which circulated among farmers and tradesmen surprise the reader with the amount of ancient history, Latin phrases and literary matter. Even though some family interpreter was usually on hand to help the group, the Ames dynasty of publishers and the Leeds-Franklin rivals indicate a flourishing circulation of ideas. Edes and Gill's Almanac for 1769 offers an allegorical selection which assumes understanding of the reference by its clientele: "*An Extract* from the History of Publius Claudius Britanno-Americanus," hitting at Governor Bernard, who was recalled in the following year.[53] The propaganda of Samuel Adams in the Boston *Gazette,* through which, in the words of Chastellux, he "got at the Tories through the agency of the Greeks and Romans," popularized all these classical dogmas of freedom. What is more, this happened in a community where the Sons of Liberty were described by Governor Hutchinson as the "dregs of Romulus." "That pale, lean Cassius" knew how to translate the Law of Nature into a thrilling popular slogan.[54] The artist John Trumbull's father had warned him that "Connecticut is not Athens"; and the same Hutchinson advised a friend: "You don't live in the Commonwealth of Plato."

Whatever the tide-water mark of learning may have been, the British-European and the American had by the period just preceding the Revolution reached a high point of classical interest, whether in education or general reading. The same applied to art; for Christopher Wren, the provider of so many building designs in the Colonies, desired St. Paul's Cathedral to be restored "after a good Roman manner"; and the architecture dear to Jefferson's heart was the Maison Carrée at Nimes. The Founding Fathers wore the toga in their imaginative moments. Washington's hobby in mantelpiece art was a collection of figurines such as Aeneas carrying Anchises out of Troy, the goddess Flora, and other mythological pieces. In his youth the rules of behavior which he drew up for himself were adapted from a copy of Sir Roger L'Estrange's *Seneca's Morals by Way of Abstract,* a book owned by his Fairfax friends at Belvoir. And in the guest book at Belvoir it was customary for visitors to write their names, "generally following a Latin quotation," as the artist, Charles Bridges, did about 1738:

Si Deus est Animus,
Sit pura mente colendus.[55]

Young Nathaniel Ames, a freshman at Harvard in 1758, notes in his diary[56] that within three weeks he saw *Cato* played for the third time, "each more perfect than before," as well as *The Roman Father.* Addison's *Cato,* Washington's favorite play, was presented several times at Valley Forge, at the request of the Commander-in-Chief, in order to maintain morale in the army. William Pitt, whom the artist, Charles Willson Peale, portrayed as a Roman Senator, said the final word:[57] "I have read Thucydides and have studied and admired the master-states of the world. No nation or body of men can stand in preference to the General Congress at Philadelphia." John Trumbull, frank critic of any inadequate teaching of Greek and Latin, turned out a patriotic tribute to the same effect:

Now meet the fathers of this western clime,
Nor names more noble graced the rolls of fame,
When Spartan firmness braved the wrecks of time,
Or Rome's bold virtues fanned the heroic flame.
Not deeper thought the heroic sage inspired,
On Solon's lips when Grecian senates hung;
Nor manlier eloquence the bosom fired
When genius thundered from the Athenian tongue.[58]

Stuart P. Sherman has expressed the situation well:[59]

It is insufficiently recognized that in the third quarter of the eighteenth century America, like England,

[53] Greenough, C. N., *New England almanacs, 1766 1775,* and the American Revolution, 15, Worcester, Mass., Amer. Antiquarian Soc., 1936. Kittredge, G. L., *The old farmer and his almanack,* 41, 65, 79, etc., Cambridge, Harvard Univ. Press, 1920.

[54] Brown, Robert E., Democracy in Colonial Massachusetts, *New England Quart.* **25**: 312, 1952. Miller, J. C., *Sam Adams,* 19, 247, etc., Boston, Little, Brown, 1936. Plutarch, *Phocion,* 3, and Cicero, *Ad Atticum,* II.i.8.

[55] Morison, S. E., *By land and by sea, essays and addresses,* New York, Knopf, 1953. Foote, H. W., Charles Bridges, *Virginia Mag. Hist. and Biog.* **60**: 13, 1952.

[56] Warren, Charles, *History of the American Bar,* 18, Boston, Little, Brown, 1911.

[57] Jan. 20, 1775, of the First Continental Congress. Force, *American Archives, Fourth Ser.* **1**: 917–938.

[58] *Elegy on the times,* Boston, 1774.

[59] *The genius of America,* 200, New York, Scribners, 1923. For a similar statement by Jefferson, see Chinard, G., *Letters of Lafayette and Jefferson,* 84, Baltimore, Johns Hopkins Univ. Press, 1929.

was at the height of her classical period. I mean the period when statesmen, poets, and painters most deliberately and successfully imitated the examples of the ancients. The public characters of Washington and his friends, like those of Burke and his friends, were in the grand style, were in a style more or less consciously moulded upon that of the great Republicans of England, Rome, and Athens.

Towards this climax the "matter of Greece and Rome" had begun at an early stage to gather headway, in the poetry of Anne Bradstreet, the political concepts of Nathaniel Ward, and the private libraries of the Philadelphia merchants or the Virginia squires. It was not so much a fundamental philosophy as it was a habit of mind, a vehicle of expression. Like the whetstone of which the poet Horace speaks,[60] it could not cut, but it could sharpen other instruments for the purpose of cutting. The academic, political, and literary life of the non-frontier seaboard reflected the program familiar to all those who had passed through grammar school, not to mention college. It was acquired by men like Franklin and John Bartram, who taught themselves Latin in order to be at ease in an expanding world. It is fair to say that the superiority of American Colonial political writing and speaking was due, first to a classical education, second to reasoning in theology and law, and third but not last in general importance, to familiarity with the English Bible.[61]

[60] *Ars Poetica*, 304–305.

[61] McDonald, William, in *Cambridge Hist. of Amer. Lit.* **1**: ch. 8, pp. 124–125, New York, Putnams', 1917.

A COMPARATIVE STUDY OF SOCIAL AND CULTURAL CHANGE

ALEXANDER H. LEIGHTON AND ROBERT J. SMITH
Department of Sociology and Anthropology, Cornell University

(*Read by Dr. Leighton April 25, 1952*)

INTRODUCTION

THIS paper is concerned with an effort toward a greater understanding of those factors which enter into social and cultural change, of some of the consequences of such change, and of the processes by which such change might be measured. The network of these interlinked problems is of obvious importance in the world today, whether viewed in terms of the enlightened self-interest of North Atlantic civilization or in terms of action toward relieving human suffering everywhere. Our concern, however, in this presentation, is not with the application of knowledge, but with a prior phase, namely its increase.

The report has two parts: (1) a comparative analysis of seven culturally diverse villages, and (2) a proposal for a more systematic and quantitative approach to this type of study. Although the first part is based largely on approximations and estimates, it does lead to some conclusions regarding widespread trends that seem to occur despite cultural diversity. The second part takes origin in these results and is an attempt to suggest means by which greater precision might be developed.

I. THE COMPARISON OF SEVEN VILLAGES[1]

In 1950 the authors, together with a group of colleagues in the Department of Sociology and Anthropology at Cornell University, participated by means of a faculty seminar in a comparative analysis of six communities in widely different regions of the world. The aim of this study was to develop further understanding of the process whereby social and cultural patterns are altered as a result of introducing technological changes in agriculture, industry, and health. The materials employed were drawn from the previous anthropological field experience of the participants in the analysis. These field experiences in the different communities had varied from six months to two years in length. Following the first attempt at analysis, one of the authors (R. J. S.) spent twelve months in a Japanese community and the results of this experience were added to the previous work, bringing the total of villages compared to seven.[2]

In order to give an idea of the range of different conditions obtaining in the seven communities, a brief descriptive note on each will be presented. This will be followed by a discussion of the comparative analysis.

(1) *Northeastern North America:* Ridgewood, actually two adjoining rural areas, is located in the Canadian Maritimes and has a total population of 315 persons. About one-fifth of these are Acadian French and the remainder are of British descent. Slightly fewer than one-third are Roman Catholic; the rest are Protestants of the Baptist and Disciples sects. Occupations are mixed, with some farming, trucking, lumbering, and odd-jobbing. Good gravel roads connect the rural areas with one another and to the asphalt highway which runs between the county's largest town (population 3,000) and a larger urban center to the south. Ridgewood is about fifteen miles from the former and sixty miles from the latter. There is regular, though infrequent, bus service on the highway, but locally owned trucks and automobiles make travel to these centers possible with a minimum of inconvenience in summer. In winter and early spring the condition of the roads often greatly reduces contact with the outside for months at a time. A railroad runs through the Ridgewood area, with two passenger trains each way every day.

[1] We use the terms village and community rather loosely to denote a number of aggregates of people which range in size from several hundred to several thousand.

[2] The participants in the seminar, in addition to the authors, were John Adair, Charles Brant, Allan R. Holmberg, Kamol Janlekha, Morris Edward Opler, Lauriston Sharp, and Rudra Datt Singh. The first part of our report draws heavily on their contributions and we wish to make grateful acknowledgment of this debt. At the same time it is advisable to say that these men do not necessarily endorse the approach which we have taken in this paper, particularly in the second part. Since they are now geographically scattered, it has not been practicable to rediscuss the subject with all of them.

The seminar and certain aspects of the field work were made possible by a grant from the Rockefeller Foundation. The rest of the field data were derived from a number of different projects supported over a period of years by the Carnegie Corporation of New York or by the Social Science Research Council.

The major part of the cash income has always been derived from the sale of forest products. Fluctuations in foreign markets seriously affect the local economy. Climate: temperate, marine.

(2) *The Navaho Reservation:* Fruitland, a government irrigation project established in 1937 in the San Juan Valley, has a total population of 1,000. This figure is highly unstable, however, since the number of households drops from 191 in the summer to about 40 in the winter. Except for a handful of government officials, the residents are Navaho. The project, divided into three sections, is thirteen miles long. Its eastern edge is three miles from Farmington, a town which had about 5,000 people at the time of the field work. The western edge is five miles up-river from Shiprock, an important administrative center of the Navaho agency. A dirt road runs the length of the project, connecting at one point near the center by means of a bridge with a Mormon farming community across the river and with an asphalt highway that runs between Farmington and Shiprock. Automobiles and pick-up trucks provide most of the transportation for local residents. Although farming is the main occupation, off-reservation work has become increasingly important since the start of World War II. The Navaho farms are much less productive than those of the Mormons, and the government is striving to improve the agricultural practices of the Indians. Climate: semi-arid, with an average rainfall of 6.64 inches, and snowfall of 8.8 inches.

(3) *Peru:* The village of Viru has a population of 2,160, all mestizos except for about thirteen Chinese and Japanese. Eighty-three per cent of family heads are farmers, full-time or part-time. The village is located in a valley on the north-central coast of Peru about three hundred miles north of the capital city, Lima. Thirty miles to the north is Trujillo, an urban center of 40,000. Viru lies two miles east of the asphalt-surfaced Pan-American highway which crosses the valley from north to south. There is daily contact by bus and truck with neighboring villages and urban centers. A sandy spur, suitable for truck travel, connects the village with the highway. The basic crop is maize, planted with beans and squash, although pineapple is becoming an important cash crop. Climate: two-season tropical, wet from December to May, dry from May to December. There is less than one-half inch of rainfall annually, forcing dependence on irrigation.

(4) *Thailand:* The village of Bang Chan, located on the central rice plain, has a population of about 1,600. Of these, except for one Chinese resident, 93 per cent are Buddhist Thai and 7 per cent Muslim Thai. Agriculture is the primary economic activity. The village is four miles from a district center and twenty miles northeast of Bangkok, largest city and capital of Thailand. Good canal communication with the capital has existed for 120 years, and in 1946 a road was constructed permitting bus service between the district center and Bangkok. Rice is the major agricultural product, both from the standpoint of local consumption and of a cash crop. Climate: monsoon with about fifty inches of rainfall annually, mostly between May and September.

(5) *Burma:* Tadagale, a village of lower Burma, has a population of about 900 people. Of these 90 per cent are Burmese Buddhists, 6 per cent Indian Hindus, long resident in Burma, with a scattering of indigenous groups and crosses (Karen, Burmese-Karen, Indo-Burmese, etc.). The village is seven and a half miles north and slightly east of the heart of Rangoon, capital and major port of the country. Rangoon is reached in any of three ways: (1) by a major highway located some two and a half miles from the village; (2) by a large creek navigable by sampan; (3) by a short-line railway running between Rangoon and the town of Insein. The latter is the headquarters town of the district to which Tadagale belongs, and is about six miles west and north of the village. There is a small station at Tadagale. The railway dates back about twenty years, and the highway was put through early in this century. The great diversity of the occupational pattern is reflected in the fact that many people are employed in Rangoon. Rice cultivation is, however, the most important activity, although almost everyone has several subsidiary occupations in addition to a major one. Climate: tropical monsoon, with about one hundred inches of rainfall in the period from May to October.

(6) *India:* Madhopur, situated in north-central India, has a population of 1,860, composed of twenty-three sub-caste groups. Of these, nineteen are Hindu and four are Muslim; many are occupational groups, such as sweepers, basket-makers, carpenters, potters, and smiths. Agriculture is the primary occupation for the village as a whole. Madhopur is in the south-eastern section of one of the United Provinces, Uttar Pradesh. It is twenty-five miles from Benares, and eighteen miles from Jampur, the district headquarters. Four miles away is Karakat, the subdivisional headquarters and market town for Madhopur. The nearest railroad stations are at Kerakat and Dobhi, each four miles from the village. A dirt road that runs from Dobhi to Madhopur is passable for wheeled vehicles about eight months of the year. The arable parts of the village area are about equally divided between good rice land and ground suitable for wheat and barley. Climate: monsoon, with forty-five inches of rain, all of which falls between June 21 and October 21.

(7) *Japan:* Yasuhara, a village on the island of Shikoku in southwestern Japan, has a population of about 4,000. All residents are both Shintoists and Buddhists; there are no Christians. Agriculture is the primary occupation, although forestry has long been important, and day labor assumes increasing importance. The village is eleven miles south of the urban center of Takamatsu (population 150,000). There is an excellent gravel highway along which trucks and bicycles travel throughout the year; there is also regular, and frequent, bus service to the north and south. Most of the agricultural lands are suitable for wet rice agriculture; slightly more than fifty per cent of these lands are double-cropped in wheat or barley. Rice is both a staple in the diet and an

important cash crop. Climate: temperate marine, but with features of the monsoon; average annual rainfall about forty-five inches.

The selection of these particular seven communities for comparison was not rooted in any sampling rationale. Each study had been undertaken independently for reasons which varied with the different anthropologists. The desire to make a comparative analysis emerged because the personnel with experience in such varied communities were in a position to meet around a table and work together over the period of a year. The field work in all but the Japanese community had been completed or was in progress before the plan of analysis developed. Despite this fortuitous selection of the villages, it is evident that they present great contrasts, a feature which rendered them eminently suitable for a preliminary exploration of the problems inherent in the cross-cultural comparison of technological change.

We shall not describe here the operational steps by means of which the analysis was carried out. Such a presentation would necessarily be lengthy, perhaps tedious, and certainly not essential to the purposes of this article.[3] We shall, instead, trace briefly the main lines of development in the group's thinking and give the conclusions.

Starting, then, with discrete communities rather than such large units as whole cultures or nations, and taking the first fifty years of the present century as our time dimension, we expected to find that in each village technological innovation had set in motion sequences of events which ramified widely in the social, cultural, and psychological fabric of the community. On this assumption we wished to see whether there were any consequent complexes or patterns in the process which were common to all the communities despite otherwise marked differences. The approach was essentially qualitative in character, based on descriptions of culture patterns; and the analysis was conceived as limited to first approximations.

As the work progressed it became apparent that our original conception of technological innovation as the instigator of change did not offer an adequate model for understanding and comparing the phenomena in the several villages. While it was evident in all seven that technological change was of paramount importance, it was also necessary to reckon with the diffusion of ideas—ideas about man's relationship to nature (science), man's relationship to man (political and social ideologies) and man's relationship to God or gods. No less important were changes in population, exhaustion of natural resources, and wars. None of these sets of factors, including the technological, could be regarded as simply causal; rather all affected each other and all functioned as both cause and effect in exceedingly complicated, mutually entwined dynamic patterns.

In every case in which we attempted to trace the consequences of a technological innovation, we found that at the time the innovation entered the community the latter was already in the process of change. The technological innovation proved to be an additional rather than a primary impetus toward change. And hence its consequences were difficult to specify. It entered into a pre-existing movement which might be slow or fast, and in which the effects of the technological change might be large or small. We were forced to abandon any attempt to deal only with those changes which could be traced directly to technology. Instead, our attention was turned toward describing major forms or patterns of change, while keeping technology in the foreground as one among several factors of first-order significance.

After sorting and comparing many instances of change in the seven villages, we discovered that, in spite of great variety, there was evident a limited number of striking patterns common to all cases. How these may most adequately be described, and how their limits and range of local variation may be specified, are major questions which remain unanswered. In very general terms, however, they can be presented as follows:

(1) A trend away from an economic system that was primarily self-contained and independent, toward a cash economy with dependence on a larger social group such as the state or the nation.

(2) A similar shift in governmental and political affairs from relative local autonomy to dependence on higher authority in the larger social group.

(3) Changes in values, ideologies, and social usages which, although they constitute a break

[3] An account of the analytic process is available in Robert J. Smith, A comparative study of the shift in six selected villages from economic self-sufficiency to dependence on the larger unit, Unpublished Master's Thesis, Cornell University, 1951.

with the traditional and are increasingly influenced by outside forces, are not altogether in harmony with the economic and governmental trends noted above, or consistent with each other within a given community.

(4) Progressive secularization of life, with an increasingly sharp line drawn between religious and other human activities such as work, governing, and recreation.

These results of the analysis are not considered new or surprising in themselves since they are similar to generalizations that have been made about many aspects of the industrial revolution. Their interest lies in their consistent presence in those seven diverse but specific communities and in the possibility that they constitute a partial representation of those complex patterns which are characteristic of cultural change in the world at the present time. They may, in short, be adumbrations of forms that have wide, if not universal, significance and which are therefore a focus for further exploration and delineation.

In addition to the question of certain common features in the patterning of social and cultural change as seen in the seven communities, there is also the question of speed and extent. Our analysis suggests that the villages differ, some greatly, from one to another in this respect and that the four major patterns that have been outlined might lead us to discover common axes in terms of which change in one community might be compared with that in another, or change in the same community might be compared at two or more different points in time. The problem now becomes one of seeking some means of measuring differences along the common axes. Can dimensions of change be more sharply defined, and can types of data be gathered which would enable us to place communities in their proper relative positions along these axes?

The nature of the four general patterns makes it seem exceedingly unlikely that phenomena of such complexity can ever be measured directly. On the other hand there appears to be some possibility that indices might be devised which could be measured and which would also have a fairly consistent relationship to the complex phenomena. By their use, relative precision might be achieved in comparing the speed and extent of change in various communities. A proposal for several such indices is the subject of the second part of this report.

Our first two conclusions from the comparative analysis may now be summarized thus: one, although there are many types of change which are limited to one or a few groups, there are also evidently certain consistent patterns of change found in all seven of the otherwise diverse communities; and two, these patterns differ from community to community in the speed of the change process and in its extent.

The problem of speed and extent of change introduces a third item of possible interest that emerged in this analysis of the seven villages. It would seem that there is a relationship between rapid and extensive change on the one hand, and serious disorganization of the community on the other. By the latter we mean such disruption of customs, communication, authority system, cooperation, and shared values as to raise serious problems of morale and to threaten the resources necessary for survival. (That the patterning itself predisposes to this is evident from the nature of the third of the four patterns listed above.)

This implies that change, even when benevolent, can be dangerous. In saying this we do not mean to underestimate the desirable aspects of social and cultural shifts. Given under-nutrition, high mortality rates, threats to individual freedom, danger of war and other difficulties that prevail in one way or another in virtually all parts of the world today, it is clear that improvement is desirable by almost any set of human values and it is also evident that such improvement cannot be developed on a technological basis alone. Enormous social and cultural alterations are also involved.

The relationship between change and demoralization is such as to suggest that an innovation is something like surgery, which, however desirable, is fraught with risks of setting off processes in the body which could prove fatal. In communities the principal danger appears to be that of initiating sequences of action and reaction which interfere with the capacity of the group to function. As with the surgical patient, so in a community, the likelihood of a disastrous reaction to an innovation is often a question of the state of equilibrium of the recipient at the time the new element is introduced. Thus, a community that is undergoing change at a relatively slow rate and to a moderate degree may be much better able to tolerate an innovation than may another community which is already changing both rapidly and extensively, and which is consequently suffering from marked disturbances in its functional equi-

librium. In the latter situation one might suppose that an innovation which is entirely benevolent in its content (for instance, an improved method of agriculture) might, nevertheless, constitute such an overload for an already strained society that the damage would far outweigh the benefits. On the other hand, one could postulate also that an innovation might be of such a nature as to stop the process of demoralization in a society and restore it to a more stable equilibrium.

Although both of these are possible, the main point is that speed and extent of change in a community have important implications for the effect of an innovation, over and above the content of the innovation itself. On this basis, one may venture to postulate that for a given society and culture there is a threshold of tolerance for change. As long as speed and extent of change do not exceed this threshold, innovations (provided they are not in themselves destructive) can be admitted without seriously damaging consequences. When the threshold is exceeded, then a situation exists in which demoralization transcends the integrative processes in the society. From this there may come extinction, or forms of social pathology such as general apathy or general hostility.[4]

These considerations in regard to the possibility of a threshold of tolerance for change point to the utility of devising the kind of indices which have already been mentioned and which will be further elaborated in the next section. For, if societies can be measured in regard to their rate of change, it may become possible to establish criteria whereby the position of a society with relation to its threshold of tolerance can be ascertained. This of course involves many steps beyond the establishment of cross-cultural indices of change, since it means that indices of disorganization or demoralization must also be found. The latter are not within the scope of this paper, but their potentiality suggests additional reasons for being concerned with measurable indicators in the comparative study of changing societies.

II. INDICES OF CHANGE

Inspection of the four patterns of social and cultural change presented in the previous section, together with more detailed instances of their operation in the seven communities, has suggested a large number of different kinds of factors which might conceivably serve as indicators of the process.[5] Selection from this array has of necessity had an element of the arbitrary, although there have been some obvious guiding principles, such as the probability of the indicator being significant with regard to the trends which concern us, and the feasibility of gathering the necessary data for its employment. Of these two criteria, the former has been the more weighty, since we have felt that feasibility can be determined best in trial. We have, therefore, used the latter consideration for the most part only to eliminate operations that are clearly impossible. We realize that there may be much better indices than those chosen, and also that some of ours may not be workable. The hope is that the factors selected will demonstrate the idea and serve as a starting point for developing more adequate indices.

TABLE 1

Axis	Indicator I	Indicator II
1. Diet	Calories/day/individual	Calories/day/individual obtained from new foods
2. Transportation	Miles traveled outside the community/week/individual	Miles traveled outside the community/week/individual by new transportation media
3. Communications	Hours/week/individual listening to or watching mass communications media	Hours/week/individual involving new mass communications media
4. Occupations	Number of occupational roles performed by community members	Number of new occupational roles performed by community members
5. Labor	Hours of work/week/individual	Hours of work/week/individual in new occupational roles
6. Family	Number of persons	—
7. Household	Number of persons	—

In table 1 are given the seven axes of change with which we shall deal, and their indicators.

Each of these indicators will be described and its presumed relationship to the change process outlined. Before doing this, however, it is necessary to explain a methodological point concerned with time.

At least three logical possibilities for comparison exist:

(1) Comparing several communities with each other in terms of extent of change at a given time;

(2) Comparing the same community with itself in terms of extent of change at two or more successive periods of time;

[4] Alexander H. Leighton, *Human relations in a changing world*, 235–252, New York, E. P. Dutton, 1949.

[5] Among the indicators which we considered, but have not used here, are population, migration patterns, amount of capital invested locally, exhaustion of natural resources, growth of government services on local levels, and amount of time spent in religious activities.

(3) Comparing several communities with each other in terms of speed of change during a given period of time.

Let us consider each of these in order:

(1) Assuming the aim of comparing extent of change in communities, it is suggested that data relevant to each indicator be gathered at two different points in time. If we take diet as an example, the data on calories would be gathered at time T_1 and again at time T_2. The difference in caloric intake per day per individual would be the indicator of change, a difference which could be either positive (more calories) or negative (fewer calories). Since it is change we are interested in, not adequacy of nutrition, the indicator could be expressed as a percentage, with the number of calories per day per individual at time T_1 being 100 per cent.

It is proposed that T_1 and T_2 be held constant for all communities and all indicators. The optimal time span, however, is a little hard to define. Obviously, the greater the spacing between T_1 and T_2, the more the likelihood of significant change. Hence, if one chooses too short a period, the indicators may not be sensitive enough to register the differences. If, on the other hand, the time span is too long, alterations or cycles in the rate of change itself may be missed, with the result that, while the indicators show extent of change, they fail to reflect differences associated with relative speeds. For example, two communities might show the same shift in caloric intake over a fifty-year period, but one of them might have made the whole change in the last year while the other had been undergoing it gradually over the entire fifty. The implications for social and cultural equilibrium are obviously different in these two cases.

There are practical problems also in considering the length of time between T_1 and T_2. We believe the most desirable procedure would be to gather the data for T_1 currently and then, after a lapse, gather the data for T_2. This introduces all the technical and human difficulties of longitudinal research in the social sciences. If much time elapses between T_1 and T_2 it is probable that there will be little left of the original research team to work on the second survey. This, of course, raises serious problems of continuity and comparability. It seems likely, therefore, that one should not attempt a period of longer than five years.

Another possibility is to make the current data relevant to T_2 and to use documentary materials and older people as sources for the T_1 data. Here much longer time spans could be utilized, but there are serious questions to be raised regarding the validity of such data. This will tend to vary with both indicator and community, in some cases being fairly accurate, while in others diffuse and uncertain. It is not the method of choice, consequently, unless there are particular reasons for desiring the long-time span and unless there is the possibility of selecting communities in which there are trustworthy sources of information with regard to the past.

(2) The comparison of a given community with itself in terms of extent of change at two or more successive periods of time, can be accomplished by the same procedures as noted above, with the addition of one or more subsequent time periods. That is to say, the first datum is the difference between T_1 and T_2; the second, the difference between T_2 and T_3; the third, the difference between T_3 and T_4; and so on for as long as it is desirable and practicable to go. By this means extent of change can be plotted against time and a rate per year or per five years can be established.

(3) If the above can be done for one community, it can be done for several, and this opens the possibility of achieving the last of the three items noted previously, namely, comparing communities with each other in terms of speed of change during a given span of time. This involves making the same observations at the same time points (T_1, T_2, T_3, etc. . . .) in all communities.

Turning now to the axes and indicators themselves (table 1), by comparing T_1 and T_2 for each axis, the items may be categorized as "vanished" (those appearing at T_1 only); "continuing" (those appearing at both T_1 and T_2) and "new" (those appearing at T_2 only). It is with the last category that we are chiefly concerned in this paper. Recognizing the limitations of the data available, we have set up the models described below. They will be discussed in terms of T_1 and T_2 with the understanding that the same principles apply to other time units, such as T_3 or T_4.

1. DIET

Diet was selected as an index because it seemed to change as a cash economy appears, together

with industrialization of the community or of neighboring areas. There are at least two dimensions to this change, as with Nos. 2, 3, and 4 to follow. The first (indicator I, table 1) applies to those numerous areas of the world where the amount of food per person is far below the optimum from a physiological point of view. If a cash economy and an improved technology operate to increase the economic resources of a sizeable proportion of the society, then the total amount eaten increases. Hence we can use as an overall indicator *calories per day per individual.*

The second point is probably the more important and has to do with the introduction of variation into the diet. Once the amount of food available per capita reaches a level sufficient for human needs, it will not increase much more no matter how extensive the social and cultural changes experienced by the group. On the other hand, the variety of foods eaten is the result of some combination of available cash, appearance of new food items, and the diffusion of ideas regarding their desirability.

To measure this latter factor (indicator II, table 1), it will be necessary to rate *calories per day per individual derived from new food items.* By this means we would have a cross-cultural indicator of the amount of new food types appearing in the community between T_1 and T_2. It is proposed that this rating would be capable of registering change even when the first (*calories per day per individual*) showed nothing of significance.

The calory has been chosen as the unit of measurement since it was devised as a means of comparing very different kinds of foods according to a common standard. We realize that caloric figures tell nothing about total nutrition and that one could die of beriberi on a high calory diet. The point is that we are here concerned not with adequate nutrition, but with a measure that can be applied to all kinds of food as a means of noting changes that have relevance to social and cultural phenomena.

2. TRANSPORTATION

As in the case of food, so here it is postulated that multiple factors in a changing society lead to more miles being traveled by more individuals. The greater economic and political dependence on the larger society produces more travel outside the community, particularly in search of industrial jobs. It is proposed that the indicator be in terms of *number of miles traveled outside the community per week per individual.*

Related to such movement is the advent of roads and various vehicles from bicycles to aeroplanes, to measure which we suggest the indicator, *number of miles traveled outside the community per week per individual by new transportation media.* As in the case of food types, this might prove a more sensitive indicator in situations where the overall figure failed to register significant change.

3. COMMUNICATIONS

All forms of mass communication are lumped here—telephone, radio, newspapers—and the emphasis is on how much time the individual spends with a medium of communication by means of which new ideas and new values reach him. These are not, obviously, the only means for such transmission since the travel mentioned in connection with transportation exposes not only the traveler to new thoughts, but also the stay-at-homes upon the traveler's return. It is also evident that the hours per week do not take into account the content of the communications or the degree to which the content registers with the individual. These are problems which might vitiate this index, but we are inclined to assume that with the magnitude of change that is involved in cross-cultural situations this indicator does penetrate fairly deeply into the complex. It is proposed that measurement be in terms of *hours per week per individual,* to indicate change between the two points in time, and that *hours per week per individual involving new media* be the second indicator.

4. OCCUPATIONS

It is proposed that this indicator be measured by a straight count of the number of occupational roles existing in the community. The most significant aspect is that a marked change in either direction (more occupational roles or fewer occupational roles between T_1 and T_2) is almost certain to be connected with profound changes in the society. This observation is true of all our indices—that it is degree rather than direction of change that counts. With the first three indices, however, at least in our seven communities, change has resulted in an increase in the items considered. With occupational roles, this is not necessarily so. Old roles certainly disappear and new ones emerge with change, but while in most instances there is more gain than

loss, there is reason to expect that in some cultural groups (e.g., Indian villages) a decrease in types of occupational roles occurs as standardized jobs in industry become available.

These considerations suggest that, if the gross number of occupational roles in a community shows no significant trend, a more sensitive indicator might be the number of new roles that have appeared in T_2. If the gain exceeds the loss (or vice versa) to any marked degree, then we may suppose the existence of far-reaching shifts in the structure of the society. The suggested indicators are, first, *number of occupational roles performed by community members,* and second, the more sensitive *number of new occupational roles performed by community members.*

5. LABOR

This refers to work for which there is pay, either self-employment (for instance, a commercial farmer) or hired labor. As with the axis immediately preceding, the change can be toward more or fewer hours of work and still be in keeping with the trend outlined in the four general patterns. Although as a rule the trend is toward fewer hours of work, it is the extent of change that is important rather than the direction. It is proposed that this be measured by *hours per week per individual.*

The second indicator would be *number of hours per week per individual spent at new occupational roles.* As can be seen, this combines item 5 with item 4, resulting in both having greater meaning as indicators of change. This is due to the fact that the number of new occupational roles and the number of hours worked per individual may vary independently of each other. That is to say, there might be, for example, many new categories of occupational roles but actually few jobs in any category and hence few people affected. If, on the other hand, the number of working hours per individual and the number of occupational roles increase, then we may presume a strong indication that many people are being drastically affected by a changing work situation. Many other illustrations of different possible combinations of these two factors could be given, but the essential point is that together they tell more about degrees of change in patterns of work than either alone.

6. FAMILY SIZE

In many places there is apparently a reduction in family size and this appears intimately related to changes in values, ideologies, and social usages, including the trend toward secularization. The traditional kinship units appear to be breaking up and family organization is more and more in terms of the biological unit of father, mother, and children. The younger generations seem to have more freedom of choice and more freedom from the authoritative influences of older people. As part of this trend there is a disappearance of the economic interdependence of the extended kinship systems. Thus, selection of mates, time of marriage, and number of children (where birth control is known) are progressively matters of individual choice. Without pretending to specify the causal relationships, it seems plausible to suppose that change in family size is intimately connected with major cultural shifts. It is proposed that *number of persons* in the family be used as the unit of measurement.

7. HOUSEHOLD

This item taps much the same dimensions as the previous, but with particular emphasis on changes in extended family systems. By comparing this index with item 6, it is possible to see change in household size both in terms of reduction in number of children and in terms of the reduction in numbers of other types of individuals making up the household, such as relatives and servants. As with the former, the

TABLE 2

Axes	Indicator I (Change between T_1 & T_2)		
	Yasuhara	Fruitland	Ridgewood
Diet (calories/day/individual)	10%	10%	20%
Transportation (miles outside/week/individual)	200	800	1,000
Communications (hours/week/individual)	300	400	500
Occupations (number of occupational roles)	400	1,000	800
Labor (hours/week/individual)	− 5	−10	−20
Family (number of persons)	−30	−25	−40
Household (number of persons)	−50	−30	−60
	Indicator II (New Items at T_2)		
(Calories/day/individual, obtained from new foods)	40%	60%	80%
(Miles outside/week/individual, by new transportation media)	80	90	95
(Hours/week/individual involving new mass communications media)	95	95	100
(Number of new occupational roles)	60	70	90
(Hours/week/individual in new occupational roles)	30	60	70

total number of persons is taken as the unit for counting.

While it may seem that the very crudity of all seven of the measurements suggested casts doubt on any statements which might be derived from them, we would emphasize the point that their function is not to provide numbers which will obviate the necessity for presenting thorough descriptive materials to round out the picture. They are intended to be meaningful indices to which qualitative evaluations may be added.

Having laid out the general scheme, the next step is to present an illustration of its application. For this we shall use the material reported in Part I relating to the villages, and the same time span, namely fifty years. However, for the sake of economy of space we shall not attempt to compare all seven villages, but rather three, one showing extreme change, one showing little change, and one from the middle range. The results are given in table 2.

In the upper half of the table, the T_1 figure serves as the base of 100 per cent, while in the lower half, T_2 is 100 per cent and the figure shown is that part of the total comprised of new items. Thus, in the case of the Japanese village, Yasuhara, the upper half of the table shows that the intake of calories has increased 10 per cent, while the lower half shows that 40 per cent of the diet at T_2 was composed of items that were not being eaten at T_1. In the Navaho community of Fruitland the overall change in diet has been the same, 10 per cent, but the new items introduced between T_1 and T_2 make up 60 per cent of the food being eaten at T_2.

The three communities may be ranked tentatively. There is a tendency as far as overall change in diet, transportation, communications, and labor is concerned, for Yasuhara to register the least change, Fruitland somewhat more, and Ridgewood the most. The same holds true as far as indicator II is concerned: new items in T_2 tend to be least numerous in Yasuhara; more numerous in Fruitland; and most numerous in Ridgewood.

As far as family and household are concerned, the three communities can be ranked, but with Fruitland lowest in amount of change between T_1 and T_2, Yasuhara next, and Ridgewood highest. These differences might be related to the fact that the people of Fruitland, as compared with Yasuhara and Ridgewood, have been undergoing most of their major changes in recent years, and hence these two items, which for many obvious reasons do not change quickly, have not kept pace with the others.

It seems to us that these results are enough to suggest that indicators of this sort might be developed, and that the next step is a field study designed to test this proposition.

From this preliminary attempt at applying the method to data already collected from the three communities, we can say tentatively that a relationship exists among changes in diet, transportation, communications, and labor—increasing change in one is accompanied by increasing change in the others—and that the importance of new items in the inventories for these axes of change increases in the same fashion. Similarly, there is a connection between the decrease in size of family and size of household, although this change does not occur in the communities in the same order as it does in the four pointed out above.

As far as occupations are concerned, the trend is less clear; the overall indicator shows that Yasuhara is still least changed, but the positions of Fruitland and Ridgewood are reversed, with Fruitland registering most change.

CONCLUSION

This report on an approach to the study of social and cultural change may be summed up and concluded in three parts:

(1) An exploratory analysis, in which seven exceedingly diverse communities were compared, resulted in the tentative definition of four general patterns of change as being common to all seven. These configurations point to the desirability of further work of a descriptive and comparative nature so that additional patterns of this order may be delineated and the nature of the process examined. The four general patterns also suggest a framework or starting point that might be used in an extension of descriptive, comparative studies to communities other than the seven that have been treated in this paper.

(2) The four common patterns provided dimensions in terms of which it is possible to think of making quantitative comparisons regarding the rate of change. This was further enhanced by a strong impression on the part of the analysts that all seven communities could be arranged, at least roughly, on a scale from slight to major change. In line with these possibilities several indices of change are proposed and a demonstration made

of how they might be used. Their value is thought to lie in the greater precision they could lend to the investigation and analysis of the process of social and cultural change. It is realized that at best they cannot stand alone, unsupported by descriptive, dynamic accounts of the societies in question. It is also appreciated that formidable operational problems are involved. None the less, it is our feeling, based on the study of the seven villages, that such quantification can be both dynamically significant and operationally feasible.

(3) Although the seven communities all show alteration within the framework of the four general patterns, they differ markedly from each other in both speed and extent of change. It was noticed that the groups which showed the higher rates and the greater extent of change were also apparently the more disorganized and demoralized. This pointed to the proposition that human societies have a limit to the amount of change they can tolerate within a given period of time. It is suggested that such limits or thresholds might be definable and detectable. This opens rather long vistas of research, involving not only valid indices of change, but also valid indices of disorganization and demoralization. However, even if a test of such a concept is necessarily distant, its singular importance in human welfare has given impetus to our preoccupation with indices of social and cultural change.

CULTURE CHANGE AND REINTEGRATION FOUND IN THE CULTS OF WEST KINGSTON, JAMAICA*

GEORGE EATON SIMPSON
Oberlin College

THE BELIEF SYSTEM OF JAMAICAN REVIVALISM

Unlike the devotees of the *vodun* cult in Haiti, of *santeria* of Cuba, *shango* in Trinidad, cults in northern and southern Brazil, and in other parts of the New World, Jamaican revivalists do not worship old African gods such as Legba, Damballa, Ogoun, Obatala, Oshun, and Gede alongside the Catholic saints. Jamaican revivalists, both Revival Zionists and Pocomanians, believe strongly in a world peopled by many "spirits," including Jehovah God Himself; Christ; Old Testament prophets such as Jeremiah and Isaiah; archangels, especially Gabriel, Michael, and Raphael; New Testament saints, particularly Matthew, Mark, Luke, and John; Miriam, Samuel, Solomon, Moses, Ezekiel, David, Joshua, Nathaniel, Daniel, Shadrach, Meshach, and Abednego; Seraph, Tharsis, and Constantine; Satan and Rutibel; and the dead. These "spirits" punish and reward the living, and cult leaders try to enlist their help and to avoid their wrath through both public and private rituals. The spirits serve as messengers as well as protectors and avengers, and ordinary believers, as well as the cult specialists, seek and receive messages (warnings and advice) through dreams and visions. Through "spiritual dancing" or "laboring in the spirit," which consists of singing, trampling evil spirits underfoot, over-breathing, and groaning, the leading members of a cult group publicly attempt to increase their religious understanding and to induce spirit possession.

The multiple soul concept of West Africa persists in Jamaica, as it does in many parts of the West Indies, among the untutored. In addition to a soul, which returns to God for judgment, each person is believed to have a shadow or "duppy" which remains behind after death. Magical rituals make it possible to summon a duppy for the performance of specific deeds; other procedures nullify the intentions of spirits of the dead which have returned to torment their living relatives or which have been summoned by one's enemies to cause illness, death, or other misfortune.

The revivalist cults are related to all aspects of culture and life in West Kingston. In family life, supernatural sanctions of common-law marriage are found in the way the legal wife, the common-law wife or wives, and the children regard a man's spirit after death.[1] All of a lower-class Jamaican's "wives" and all of his children are expected to attend all of his death rituals. The woman nearest the "table" on these occasions is the "inside" woman, that is, the woman the man lived with at the time of his death. The other women take orders from her. The children of the "inside" woman are not necessarily nearer the table than are the other children, nor are each woman's children grouped around her. At a given death rite, some of the man's children sing, some may read Psalms or put bouquets of flowers on the altar, and others may sprinkle perfume on the ground. The "widows and children stand in fear of an offended ghost of their dead father and husband" and believe that the dead man will disturb them if they do not participate in the services for him. The rites to separate a devotee from his cult and family are held at the wake or on the ninth night after death, but, in some instances, services are held every night for nine nights.[2] In theory, a memorial service for a dead person should be given annually, at least for several years, but many families in West Kingston cannot afford these services. When such rites are arranged, the spirits of the dead are "fed,"[3] as are the dead members of a revivalist group at the time of its annual "sacrifice" ceremony.

* The field work for this study was done in 1953 with the support of a grant from the American Philosophical Society. This paper was read at the meetings of the American Anthropological Association in Detroit, Michigan, on December 29, 1954.

[1] M. J. Herskovits, The southernmost outposts of New World Africanisms, *Amer. Anthropologist* **45**: 506, 1943.

[2] In southern Brazil, a series of rituals is held for seven nights. *Ibid.*, 507.

[3] See *ibid.*, 508 for similar rites in southern Brazil.

Among the numerous features of cult beliefs in West Kingston, the writer gave special attention to "the stones, the blood, and the herbs." Professor Bascom has reported that these elements, presumably not the focal points of Dahomean, Ashanti, and Yoruba religions, constitute the core of the Cuban *santeria* cult.[4] One possibility, according to Bascom, is that in Cuba special emphasis has been placed on the distinctive aspects of African religion which set *santeria* apart from Catholic rituals. If this hypothesis were substantiated, acculturation, in the case of the blood, the herbs, and the stones, would not have produced the merging which is found in connection with certain African and Christian beliefs, but an increased importance in the New World on traits which have been regarded by ethnologists as secondary in Africa. Certainly the leaves (herbs) are important in the revivalist cults of Jamaica. Vases of leaves, as well as flowers, are always found on tables and altars during services and at all other times. Leaves are used extensively for medicinal and magical purposes, especially in the "bush teas" and "bush baths" prescribed by religious leaders and others who attempt to cope with illnesses and other misfortunes, including serious court cases and bewitchment. The ingredients for a bush tea or a bush bath may be determined by messages from the spirits, and may consist of some combination of Jack-in-the-bush, Rosemary, Tamarind, mint, pear, breadfruit, periwinkle, white dashalong, love bush, devil's horsewhip and other leaves, plus earth, Jerusalem candlestick cactus, oil of Jupiter and other oils.

Blood is not used extensively in revivalist rituals, at least not in West Kingston, although a blood sacrifice, pigeon or other fowl, or a blood bath, may be a part of the treatment of a sick person. One leader known to the writer sprinkles goat's blood on the ground and on healing stones at his annual sacrifice ceremony.

Stones, similar in size and shape to polished stone celts, as well as round stones, and, occasionally, stones resembling the human figure, or the heart, head, kidney, or other anatomical parts, and carved stones, are found in the homes, yards, and churches of nearly all revivalist leaders. The most knowledgeable revivalists disagree on whether the ceremonial stones have spirits in them, but even those who say the stones do not contain spirits believe that a spirit rules all the stones.[5] In any event, the stones "carry" power. These sacred stones grow either by finding food for themselves or through being fed. Some leaders "feed" their stones from time to time by leaving a saucer with crackers or a fried dumpling for the spirits to eat and by pouring aerated water or rum on the stones. One leader who does not feed his stones, prays over a head or figure carved by himself, sprinkles it with consecrated water, and anoints it with olive oil, King Solomon's oil, and oil of Moses before staring intently at the stone. "Concentration" on the stone makes him more receptive to messages from the spirits and deepens his understanding of spiritual matters. In dealing with a serious illness, a river stone may be placed in a jar or a pool of consecrated water to increase the curative powers of the water. Some stones are used to invoke particular spirits, others guard a church against evil spirits, and still others are used in sympathetic magic. When hundreds of stones fall on the roof of a house, thrown, it is believed, by duppies, the members of a lower class household are terrified. Anyone who succeeds in collecting one or more of such stones may make use of them in "destruction" rituals. Stones may be used in a "table" service when a leader cannot get to a shop for bread or fruit.

The material on the use of stones, blood, and herbs has not been fully analyzed, but it may be said tentatively that while these elements are important in West Kingston revivalism, they do not seem to be as central as they are in Cuban *santeria*. The focal points of the revivalist cults investigated appear to be fundamentalist theology, extraordinary concern about the "spirits" (both the "angels" and the dead), prayers, the rituals themselves, "laboring in the spirit" ("spiritual" dancing), spirit possession, singing and drumming. Further research, or, perhaps, a more complete analysis of data presently available, may lead to a revision of this point of view.

[4] William R. Bascom, The focus of Cuban santeria, *Southwestern Jour. Anthropol.* **6**: 65, 1950.

[5] Bascom reports: "The Cuban concept of the stones (piedras) is equivalent not to the Yoruba *okuta* (stone) but to the Yoruba *ipromi*, which is the material object which represents the power of a deity and to which its sacrifices are actually presented. The place of blood sacrifices in African religion and of herbs in African magic is widely recognized, although the use of herbs in the worship of the African deities is less well documented. . . ." See *ibid.*, 67.

ACCULTURATION

Apparently fewer Africanisms have been retained in Jamaica than in such other parts of the New World as Haiti, Cuba, Dutch Guiana, and Brazil. However, the continuation of segments of West African traditions and rites are shown in such magico-religious elements as: the use of drums and rattles; "spiritual" dancing; spirit possession; the multiple soul concept; the use of stones, blood, and herbs; attitudes toward snakes and other reptiles; the numerous associations of water with sacred ceremonies; the pouring of water and liquor and the throwing of morsels of food on the ground as offerings for the dead and the gods. African beliefs are integrated with family life in the Jamaican lower class through the supernatural sanctions given common-law marriage, the rites which separate a dead cult member from his cult-group and his family, and the "feeding" of the dead at annual ceremonies.

REVIVALIST SERVICES

The basic revivalist meetings, held on Sunday nights and on two or three week-day nights, follow a fairly definite pattern. Typically, the service is preceded by at least a half hour of drumming and singing which call attention to the meeting and enable late-comers to participate in the main ritual. With the leader's appearance, the singing and handclapping, accompanied by drums, tambourines, and rattles, increase in tempo and volume as the service moves into high gear. Prayers, Bible reading, announcements, preaching, singing, "laboring in the spirit," and spirit possessions alternate at short intervals. Frequently the meeting ends with a period of public healing. The important baptismal rites, followed by a communion service, occur three or four times yearly. A "table," a combined religous service and feast, is given: to show the appreciation of a cult member for his deliverance from sickness or trouble (the thanksgiving table); to remove evil spirits which are plaguing him (the uplifting table); to honor a dead relative (the memorial table); or to injure an enemy (the destruction table).

The preoccupation of lower class Jamaicans with death and the dead is impressive. If the dead are not treated with respect, and if the proper precautions are not taken in dealing with them, they can be troublesome and dangerous to the living. After the "setup" (wake) and the funeral, a service known as "Nine Night" may be held on the ninth night after death, and, in the case of a prominent cult member, a "Forty Day" mourning "table" may be arranged. In addition, relatives may sponsor a "memorial table" at the end of one year, or every year, after a member's death.

REVIVALIST LEADERS AND FOLLOWERS

Approximately three-fourths of the revivalists are women, and the majority of the members seem to be middle-aged or older persons. Most revivalist leaders are authoritarians who dominate the religious, and sometimes the secular, lives of their followers. The leader issues orders, appoints and dismisses church officers, takes sole charge of collections, and decides on the dates for important meetings. The survival of a revivalist church depends mainly upon the personality and ingenuity of the leader. Two or more groups may cooperate for a special occasion, but intense competition is the rule among the sixty to eighty revivalist churches in West Kingston. Competition is provided also by orthodox churches, semi-demonstrative churches, political rallies, and the Ras Tafari movement.

THE RAS TAFARI MOVEMENT

Ras Tafari, a political movement found among lower class Jamaicans, is represented in West Kingston by at least a dozen groups. This cult, which had its beginnings in 1930, is violently anti-white on the verbal level. Ras Tafari means Haile Selassie, Emperor of Ethiopia, the living God. God is black, Christ is black, Solomon and David were black, and black men of today are reincarnations of the ancient Israelites. Black men, banished from Africa because of their stubbornness and their sins, have suffered enough. Although they have had no contact, nor even any correspondence, with Haile Selassie, the members of this escapist cult believe that he stands ready to assist them in returning to the Homeland. According to Ras Tafarians, "the white man" is a hypocrite, a thief, and a murderer. The wickedest white men are the preachers, the teachers, the politicians, and the police. Members of this cult charge that the church has robbed black men of their mentality, teachers have never taught black men anything but foolishness, and politicians are out only for themselves. It is claimed that the Ja-

maican government is the worst in the world and that black men can expect nothing from it. Revenge is called for after the return to Africa, and the white man, who is said to be inferior to the black man, will become a servant.

Unlike the revivalist cults, the sex ratio is equal in some Ras Tafari groups; in others, the membership is predominantly male. In the groups the writer observed, the age range was wider than in the religious cults and two organizations were made up entirely of people under twenty-five.

In addition to meetings at their headquarters, the members of a Ras Tafari group hold two or more street meetings weekly for proselytizing purposes. Speeches by four or five members, instead of the leader's discourses in the case of revivalists, are alternated with Bible reading and interpretation which validate Ras Tafari doctrines, the singing of modified Methodist hymns, and original songs about Haile Selassie, Africa, and the suffering of black men in Jamaica. Business meetings, often held after regular meetings, are democratically conducted.

SOCIAL FUNCTIONS OF RELIGIOUS AND POLITICAL CULTS

The laws prohibiting the practice of "obeah" (magic), and the scornful attitudes of ministers of established churches, newspaper editors, and middle-class Jamaicans and Englishmen towards the religious and political cults have not obliterated these organizations. Life is hard, employment is scarce, families are unstable, and the disdain of the better off is obvious, painful, and constant. Cult life is exciting and it provides compensation for frustrations and humiliations through recognition, self-expression, and emotional release. No doubt the religious cults are dysfunctional for some lower-class Jamaicans because of the intensification of fears, the use of injurious healing practices, financial drain, and interference with work, but for the majority, under present conditions, they appear to be more functional than dysfunctional. The same may be said for the Ras Tafari group, although the constant stress on the hopelessness of the Jamaican situation and the necessity of returning to Africa may contribute to the deepening of the anxieties of some of its members.

KITA YEZO ZUSETSU OR A DESCRIPTION OF THE ISLAND OF NORTHERN YEZO BY MAMIYA RINSŌ

Translated and Annotated by

JOHN A. HARRISON

University of Florida

TRANSLATOR'S INTRODUCTION

In the winter of 1806 and the spring of 1807, an armed merchant ship of the Russian-American Company raided Japanese fishing stations and government posts on the islands of Saghalien (Karafuto) and Etorofu (in the Kuriles). This raid, led by Captains Davidov and Kvostov, represented a desperate expedient by the Russian-American Company to force open the Japan trade that the ships of the Company might have winter harbors and its Alaskan colonies a source of food. The Japan trade was not forced open although it was the beginning of a series of incidents and decisions that did end seclusion some fifty years later. No good came out of it for Russia for the raid confirmed the xenophobia of Japan regarding its continental neighbor. Even less good came out of it for the government of the Shogun, for the real weakness of that government was finally exposed to public view. But students of ethnography and cartography owe a great debt to the Japanese response to the raids, for they produced the first good scientific description of the Island of Saghalien and its inhabitants.

The sea and island area to the north of the Japanese archipelago had long been considered by the Japanese as a part of their domain. But for centuries, this region, collectively termed Yezo and containing Hokkaido, Saghalien, and the Kuriles, had been claimed mostly by propinquity. In 1806 the government of Japan decided that it ought to have more precise information as to its claims. Now, although there had been Japanese in this area prior to the beginning of written history in Japan and although the Matsumae clan which held Hokkaido in fief from 1690 to 1853 had established fishing stations on the shores of southern Saghalien as early as the seventeenth century, there existed neither a good map nor a solid first hand description of that island. What written material existed was fragmentary, for the numerous attempts to explore north of Soya Strait had been defeated by the severe winter weather. When the crisis of 1806–1807 drove the Shogunate to seek a study of the frontier, there was little to guide the one selected for the job, but fortunately, the man chosen for the task proved more than adequate.

Rinsō Mamiya was born in 1781, the son of a farmer of Hitachi province. He seems to have been regarded as an extremely able and studious youth with a bent for mathematics, astronomy, and geography. At the time of the Russian raids, he had considerable familiarity with the north, having served as a minor government official in both Hokkaido and Etorofu. He received orders in 1807 to effect a complete exploration of Karafuto and, in company with Matsuda Denjirō, he started his mission. The pair succeeded in getting about a hundred miles north of the Japanese government post at Shiranushi when winter set in and they had to return to Hokkaido. Determined to complete the job, Rinsō set off again in the spring of 1808, this time alone. He was twenty-six that June of 1808 when he started by himself into completely unknown country and he was persuaded that he would not return alive. From the beginning, he had trouble with guides. His Hokkaido Ainu guides refused to accompany him north of Shiranushi and, after he had dismissed them and taken on Karafuto Ainu guides, he got no further than Tonnai when the latter refused to go on, claiming that bad weather, the lack of trails and the dangerous tribes to the north made the journey hopeless. He managed to persuade six of these men to stay with him as far as Riyonai. At that point, they again refused to continue because a party of Manchurians had been encountered who had threatened their lives and goods. Still coaxing and cajoling, Rinsō got his party as far north as Totsushoku. But it now was September, winter was setting in, and provisions were nearly gone. The guides flatly refused to continue, so the group returned to spend the winter at Tonnai. In January, 1809, he started again, but this time he went by sea

up the coast to Nanio where he arrived on April 12, 1809. Here, believing he had reached the northern extremity of Karafuto, he wanted to strike directly overland to the east coast, where he thought he would find Russian territory. His guides refused to cross the island with him and he was forced to return to Noteto where he stayed with the local chief. His provisions being exhausted, he now lived on fish, plant roots, and on occasion a bowl of rice soup. Since his guides were no better off, he told them to return to their homes in the south while he made the journey alone to the east coast. The Noteto chief protested this plan, pointing out that Rinsō's life would be in considerable danger and that, even if he met a natural death, the Japanese authorities, with little evidence to the contrary, would hold him, the chief, responsible. Rinsō, therefore, agreed to stay at Noteto and this stay provided him with major information as he lived with the natives and participated in their daily life. It also rendered useless a trip to the east coast, as he found out the Russian frontier was on the west, not the east. He then concluded that his only opportunity of exploring the actual frontier lay in going across the straits to Manchuria, although the seclusion laws of Japan made such a trip punishable by death. Ignoring this, he persuaded the tribes-people to take him along on their next tribute mission to the Chinese authorities in the Amur River valley. With much reluctance, they finally agreed and on August 6, 1809, Rinsō left Noteto Peninsula for the Manchurian coast. Before leaving, he had, under the apprehension of death, written out a detailed report on what he had thus far observed and had sent the report by runner to Shiranushi.

MAP 1. A sketch map of the Karafuto-Amur region after an original by Mamiya Rinsō and indicating the more important places mentioned by him.

His arrival in Manchuria caused a considerable local tumult which almost resulted in his death, until the party he was with rescued him from a clutching inquisitive mob. They continued up the Amur River and fifteen days after leaving Noteto, they reached Deren, the Chinese government outpost on the lower Amur. Rinsō was well received and treated by the Chinese officials, with whom he could only communicate by writing, and he was guarded by them against the natives who were in a great ferment over the arrival of a "foreigner." After seven days, the tribute mission left, taking, at Rinsō's request, a different route back to the coast so that Rinsō could make notes on the native villages. On September 13, 1809, the party arrived back at Noteto and Rinsō had accomplished his purpose of inspecting the Japanese frontier in the Karafuto region. In November, 1809, he reached Edo, the capital of Japan, where he reported on his expedition.

He published the maps he had made and he wrote two volumes on his travels in the Amur regions. These volumes are the *Tōdatsu Kikō* (Travels in Eastern Tartary) which remained

in manuscript until the late nineteenth century. But his *magnum opus* on Karafuto was not written —it was dictated. This oral information was carefully taken down and preserved and in 1855, nine years after his death, the *Kita Ezo Zusetsu* was published with magnificent illustrations by two contemporary artists who based their works on his sketches. In 1944 the *Kita Ezo Zusetsu* was reprinted as part of a collection of original works on the Yezo area, called *Hokumon Sōsho* (Northern Gate Library). This present translation is based on the 1855 edition with much reference to the 1944 reprint. This was necessary because a considerable part of the 1855 edition is in the difficult cursive script called *sōsho*, while the 1944 reprint is entirely in standard print and, to avoid errors in reading *sōsho*, the 1944 edition was kept at hand. In addition, the 1855 edition was checked against two other presumed versions of the *Kita Ezo Zusetsu* which exist. They are the "Hokui Kikō" and the "Hokui Bunken Roku." Neither is as complete as the 1855 edition, but the latter contains some minor variations, one of which has been noted. Neither of the latter two texts was available to me and I am under great obligation to Atsushi Muramatsu for checking their text against that of the 1855 edition.

In preparing the present translation, certain difficulties presented themselves. In the first place, it is often impossible to distinguish between Rinsō and the scribe who took down his words. The original switches abruptly from first to third person and back again. In the second place, Rinsō was most accurate and laconic. Where he knew, from first hand, what he was describing, he gave a full narrative. Where his information came only from hearsay, or, at best, a short visit, he noted this and then confined himself to simple statements. Always, however, he refused to embroider his narrative. He was interested in enumerating the facts of human, animal, and plant life, and not in a gorgeous tale. This makes for a dreadfully uneven style not only in English, but in the original Japanese. This style has been kept because to arrange it so as to make the English translation more graceful would have diluted the flavor and meaning of the original. Because my purpose is the same as that of Rinsō —to provide information—style has been the least consideration of this work.

In order to avoid an excess number of notes and to prevent that usual bane of translations wherein the reader's head is forced to bob from literally translated metaphors in the text to explanatory footnotes, I have "Englished" everything with the following exceptions: (1) two metaphorical expressions, one referring to time and one to compass directions; (2) native—i.e., non-Japanese—names for places and things. In the original text a very considerable distinction is made between Japanese and aboriginal terms and this translation retains that distinction.

The reader will note that although the text contains many references to illustrations only five of the numerous block prints of the original work have been reproduced here and also that in one instance a serious contradiction in distance has been indicated. Otherwise this translation adheres faithfully to the original. Indeed, the whole purpose of this work is to render as faithfully and clearly as possible a pioneer description of the people of one of the more interesting and as yet relatively unknown areas of the world.

This research has been made possible through the generosity and imagination of the Wenner-Gren Fund for Anthropological Research, which has encouraged a historian in his belief that anthropology and history are inseparable studies.

TRANSLATION

PREFACE

Harps, lyres, bells, and drums, each sound sweet, but if there be no music written for them, their full effect is lost. Beef, mutton, pork, and fish are good to eat, but, if not well cooked, their taste is lost. Just so with a man of ability in this world. Whatever his talent, if he cannot ride on the wings of an event or a great period of time, he will remain unknown to the world. Now God bestows the same talents upon human beings today as in the olden times. Only now, the times are too uneventful to produce great men. For this same reason, the stars of ancient skies seem greater than those of the present.

At the beginning of the Bunka era, the Government of Japan wanted to take some decisive action in Yezo. Among the officials appointed to take such action was a man named Rinsō Mamiya. In obedience to a shogunal order, he went alone into Kita Yezo and stayed in that far northern territory for two years during which time he crossed into Manchuria to meet with Chinese officials whom he proudly told about Japan. After his return, we, for the first time, had a clear idea of the remote north.

Kita Yezo lies only on the fiftieth degree of lati-

tude, but since olden times it has been considered a desolate and lonely area with weather akin to that of Kamchatka. No Japanese had ever explored the interior, and even Europeans, a people eager to investigate the most remote regions, have not been there. Mamiya courageously endured great hardships during his exploration of the territory. His high achievements compare with the exploration of America by the Spanish captains and the voyage round the world by the Portuguese Magellan. His probity, his perseverance, and his ability to exert himself in the interests of his country while thousands of miles from home are not less than those of the other explorers.

What Mamiya related of his travels at that time has assumed the form of the *Kita Yezo Zusetzu* in four volumes and the *Tōdatsu Kikō* in three volumes although from these books we can learn of only part of his achievements. After two hundred years of peace, a time of greatness arrived and it found the right man in the young Rinsō. Why must we always think that the talents of the ancients were greater than those of today? I say, without hesitation, that when great events are forward, talents appear in response to the demands of the time, now as in antiquity. As the above mentioned musical instruments sound sweetly only when they are played together or in turns, and the above foods taste well only when served on good plates of wood or bamboo, so the fall of events depends entirely upon the men who have a hand in them.

Oheda, a friend of mine, requested that I write a preface to the *Kita Yezo Zusetsu*. Because I have been deeply moved by the extraordinary character of Mamiya, so do I wish these lines to take the place of an ordinary preface.

At Edo, in the seventh year of Kaei, the year of Kino-Tora, the tenth month.

PREFACE BY THE COPYIST

I have noted down whatever Rinsō has told me but as he is not talkative by nature and besides, as I am too foolish to understand many things implied, I fear that I have overlooked much of importance in my writing. Rinsō, careful of words, never tells us of those things about which he has no personal knowledge. Things similar to those in Yezo have been omitted. All place names, names of objects, etc., which are expressed in savage tongues are written in the square style of the Japanese syllabary so as to be easily distinguished. The order of description of the area runs from south to north. Within each area described, the narration begins with persons, dwellings, and industries, and ends with the principle ceremonies of coming of age, marriage, funeral and ancestral rites. The average details of day-to-day life have been omitted if they are not strange or unusual, and what we have, as a result, is an outline of the savages and their way of life. Because the *Orokko*[1] and *Sumerenkuru*[2] also live on this island and because their manners and customs are largely different from ours, they also are discussed. The Manchurian savages will be described in another book.

We will seldom call this island Kita Yezo, but use instead, the designation "this island" or the old name of "Karafuto" since it is easy to confuse Kita Yezo with Yezo proper and we wish to keep the distinction clear. Wherever the shape and form of things evade the use of words, we have used illustrations—but we ourselves have never seen these things so, as in the legend of the dragons of Prince Sheh, the picture may be only a vain effort to make you understand the thing itself.

KITA YEZO ZUSETSU OR A DESCRIPTION OF THE ISLAND OF NORTHERN YEZO

BOOK ONE

THE TERRITORY OF KITA YEZO OR, BY ITS OLD NAME, KARAFUTO

This island is thirty-two miles across the strait from Soya (the northernmost point of the island of Yezo) and lies between the forty-sixth and fifty-first degree of latitude from the North Pole. Its long axis runs north-south; its short axis east-west. It has a width of thirty-six to thirty-nine miles (with a width of seventeen to nineteen miles at its narrowest), a length of some 292 miles and a circumference of about 1,200 miles. It faces Yezo on the south, is washed by the ocean on the east and is opposite Manchuria and Eastern Siberia on its northern and western coast. About one-third of the island is inhabited by a people similar to those in Yezo, while the remainder of the inhabitants are foreigners called *Orokko* and *Sumerenkuru*.

[1] *Orokko* or *Orok* is what the Ainu called those Manchurian tribes on Karafuto who called themselves *Uta* and whom the Russians call the *Orochon*.

[2] The *Gilyaks* of the Amur Estuary. Those who lived on Karafuto were also called *Nikubun* by the Ainu.

THE NAME OF THE ISLAND

I do not know why this island is called Karafuto. Rinsō, on his travels, constantly inquired the reason, but the inhabitants could only tell him the name originated in Yezo.

The savages of the interior are not even familiar with the name Karafuto. Therefore Karafuto is probably not the real name. The interior savages call themselves *Silunaino*. The *Santan*[3] call the island *Silun-moshili*. Therefore *Silun* may perhaps be the correct name of the island. However, when Rinsō was in the Tōdatsu[4] region he heard the savages there call themselves *Kimunaino*,[5] while his fellow travelers from Karafuto referred to themselves as *Silunaino*. Now he found out that in the savage tongue *Kimu* meant "mountain," *Un* meant "community," and *Aino* meant "people." By analogy he concluded (after close observation of pronunciation) that *Silunaino* is an abbreviation for *Moshili-un-aino*. Moshili is "island" so the phrase *Silunaino* means "people who live on the island." The *Santan* people, hearing only the sound and not conversant with the speech, probably concluded that the island belonged to the *Silunaino* and so called the island *Silun-moshili*. We can conclude then that *Silun-moshili* is no more the real name for the island than is Karafuto. When Rinsō was in the Chinese government capital in Eastern Tatary,[6] he tried to get the correct version of the name of the island. They gave him four Chinese characters which are pronounced *Derenkasan*[7] (this name is listed in a map compiled by order of the Kenryu Emperor),[8] but it is more than possible that the Chinese simply named it with their own term just as we Japanese use the names Karafuto or Kita Yezo. *Derenkasan* is then probably not the real name.

A chart published in France mentions the name *Saghalien*, and the location of this island corresponds to the location of Karafuto and the place names given on it agree with the names Rinsō has given on his map. Now while in Eastern Tatary, Rinsō also attempted to get the derivation of *Saghalien*. He found that the savages of Eastern Tatary call the source of the river *Mango* "*Saghalien-oura*," *oura* meaning "river." This river runs down from the Russian borders, passes by *Derenka*, and pours into the sea running against this island. For this reason, the Russian robbers who invaded and plundered Etorofu Island in 1807 called the island *Saghalien* and hence the derivation of the name used on a French map.

In another French geographical work, this island is called *Ereutebouse*. The savage word *Ereute* means "to block up." *Bouse* means "island." This island lies in the mouth of the Amur as though it would block up that stream, hence the name. In one of the above cases the name of the river is used as the name of the island and, in the other, the island is named after a natural feature. It is an arbitrary way of naming places but quite similar to the Tatar custom. Now in the savage tongue, in the books of East Tatary, and even in the French books, there is no mention of the name Karafuto. Karafuto is not a Yezo word, so the only conclusion is that it is a name once given by the Japanese. They say that in the days when Yezo was governed by the Matsumae,[9] the savages of Karafuto met the savages of *Santan* at Soya to exchange otter, badger, and deer skins for pipes, brocades, and precious stones. Since the North Yezo wore, at that time, a Chinese style costume (even today their clothes differ somewhat from that of the Yezo proper), the Japanese traders at Soya called them the *Kara-Futo*,[10] the Japanese *hito* "human being" being corrupted to *futo* in the Matsumae dialect. This usage of many years turned the nickname of the inhabitants into the name of the island.

These then are the possible origins of the several names used to denote the great island of Northern Yezo. The name Kita Yezo became official last June in the year 1809. After being anonymous for hundreds of years, the island has finally got a name.

[3] The *Ortcha* or *Mangun*. A nomad people of the Sikhote-Alin region between the Amur and the sea. The *Gilyaks* called them *Janta* "nomads" which name the Ainu made into *Santan*. *Santan* became a catch-all word to denote the continent across from Karafuto.

[4] Eastern Manchuria. From the Chinese *Dattan* (Tatary).

[5] The *Kimunaino* are probably the nomad *Udehe* of the Sikhote-Alin country.

[6] Under the Manchu government a tax of furs, mostly sable, was laid on those people who lived in the Amur valley and on Karafuto. The "post" or "capital" mentioned by Rinsō was a small fort surrounded by a wooden palisade. Here Chinese officials came to receive the fur tribute and to distribute gifts to the tribes.

[7] Chinese *Te Leng Ka Shan*. Described in the *Tōdatsu Kikō*.

[8] The Ch'ien Lung Emperor of China (1736–1795).

[9] See introduction.

[10] *Kara* is an old Japanese term for China (specifically the China of the T'ang period) which became synonymous for "foreign" and which even today has the same connotation.

GEOGRAPHICAL FEATURES

The natural features of the southern part of the island (that area lying south of a line *Taraika* in the east, to *Riyonai* in the west and about 365–390 miles [*sic*] in width) are not much different from those of Yezo, but the mountains are not as high, as jagged, or as steep. There are hills and valleys of a quantity to make a man sick of the ups and downs of the land. There are plains and wilderness areas, but scattered among them are so many swamp and lake regions as to make the soil sterile. Everywhere the land is gloomy with vegetation and the accumulation of years of leaf decay lies in heaps that never turn into soil because of the lack of moisture. The soil is so dry and dusty that, when a traveler is walking, there are places where his legs can sink through the dust. When the savages make camp and, leaving, forget to extinguish their fires, this dust will sometimes ignite and this in turn will spread to the forests and, in spite of rainfall, these forest fires will not burn out until some twenty-five to fifty miles of forest have been destroyed. When Rinsō first visited the island, in the year 1808, a hill fire broke out at *Yokkennai*. Twenty days later, at *Kitoushi*, he saw the same fire blazing furiously and for twenty-five miles around the trees were destroyed. In the winter of that same year, on his way back to *Tonnai*, he slept in the open several times. Snow had fallen and the cold was bitter, so the party would enter the forests and make camp around an all night fire. On occasions, the fire, eating its way through the snow, would ignite the dust at the bottom and, in the morning, the party could see a fire glowing some ten feet around before they extinguished it. Because so much of the ground is this dusty soil, the vegetation cannot strike deep roots, and the fact that the island is exposed to the violent weather of the north means that often the trees of an entire mountainside will be eaten down by storms.

While there are no mountains of any great height, there is, on the west coast, a notable mountain called *Kitòushimobori* consisting entirely of angular rocks like swords or spears ranked side by side and much too sharp and steep to climb. The exact height is unknown, as Rinsō did not survey it, but it is similar to the height of Mount Shirikami in Matsumae territory. It is so famous that even the Manchurian aborigines have heard of it. On the east coast there is Mount *Totsushokautsushiri* also called *Horonobori*. This, scattered with rocks from foot to summit, is also unscaleable. Two mountains are the only celebrated scenic spots. Both of them are here illustrated. Inland, on the west coast about 390 miles from *Shiranushi*, is a place called *Wanrai*. About three miles north of there lies *Niitonbaushi*. In the interior, to the north of *Niitonbaushi*, lie only low hills. North of these hills, in the neighborhood of *Noteto*, there are no hills but only barren wilderness as far as the eye can see. Here, as well as in the south, the soil is sterile and, if not outright sandy, then dry and dusty.

The island has many rivers, none of them large. In the whole of the southern area, only the *Shī* can be called large although its mouth is only 80–100 yards wide. *Shī*, springing from the upper streams of a north flowing river, turns south past *Towatsuka* and branches off into another stream called the *Naitsupoto* which, like the *Shī*, is a slow and muddy current. (Rinsō did not see this and told me only what the savages told him.) From source to mouth of the *Shī* there lie, on both sides, plains unbroken by cliff or bluff for a distance of ten to twelve miles. Therefore, the waters of the river turn the flat surrounding area into swampland. There are only six rivers to the east (of *Shiranushi*) which have to be crossed by boat: the *Shī*, the *Toufutsu*, the *Tonnaichiya*, the *Naifutsu*, the *Naifutsupo*, and the *Taraika*. There are only three of similar size to the west: the *Raichishika*, the *Beshitorii*, and the *Nayashi*.

The largest lakes explored by Rinsō are the *Tonnaichiya* and the *Taraika*. The former is thirty to thirty-two miles around, with its long axis north and south. It is surrounded by hills and scattered with isles. While quite close to the sea, its water is not salt. It has only small fish. To get to the lake, one starts from either *Chihechiani* or *Horatsufuni*, some seventy-two miles or more to the east of *Shiranushi*, and dragging boats overland, crosses to a small lake called *Hontou*. Five miles across this lake is the mouth of the *Toukitaichipeshishiyani* where again one goes overland some two miles to the brook *Nimamukushihetsu*, then via the brook to Lake *Tonnaichiya*. Lake *Taraika* is some twenty-six miles in circumference, with its long axis north and south. It is only little over half a mile from the sea and is surrounded on all sides by plains. It is a wide lake with a few isles on its surface and yields many flatfish and gibel.

On the west coast, about four hundred miles from *Shiranushi*, lies a place called *Uyakutou*.

Beyond this, the shores of the sea are full of lakes and swamps too numerous to be counted (as in our illustration). In this area the rivers always run slowly, the water is muddy and, because of the pervading taste of fallen leaves, is most unpalatable. Offshore, the sea is calm and without great waves. This is the region of the strait that separates the island from Manchuria and, because the width of the strait averages only fifteen to twenty-four miles and at the narrowest only five to seven miles, there is a rapid mid-stream current as violent as a river in flood. The tide ebbs so greatly in the strait that at low ebb the bottom of the sea lies bare for a distance of two to five miles, and as far as one can see, there are acres of blue-green seaweed producing a sight which simply cannot be illustrated and which is never seen in Japan.

Here, in the straits, the tides differ from those of our homeland. Rinsō was at *Cape Natsuko* on June 21, 1808, and found that the tide rises at eight and again at five of the Chinese clock.[11] The strait from Cape *Rakka* to *Tamurao* freezes solid in winter so that the savages can safely cross it with dog sledges. Further along the coast there is snow on the ground all year around. In the southern areas (*Hatsushima*) snow falls on the surface of the sea and the seawater, muddied with snow, freezes on the shore in great ice blocks. In midwinter great masses of floating ice drift on the waters and sometimes are thrown ashore until a contrary wind drives them again to sea. Generally, the margin of the sea in the *Hatsushima* area never freezes, although some bays on the east coast will, on rare occasions, ice over. On the western side of the island the wind blows from the direction of the signs of the mouse and the boar from early winter to early spring.[12] Although from mid-spring on, it veers between the directions of the dragon and the sheep,[13] there are seldom wind storms during the year. About 170 miles from *Shiranushi*, on the west coast, is a place called *Ushiyoro*. From here, a distant view can be had of the Todatsu mountains. It measures about sixty miles in diameter and the closer we go, the nearer they appear. Between *Wage* and *Hokobeh* we can see them at only three and one-half miles.

There are seven ferries used by the natives to cross over to Eastern Tatary. One runs from Cape *Noteto* (called *Tetsuka* by the *Sumerenkuru*) about 415 miles from *Shiranushi*, to *Kamukata* in Tōdatsu. The passage is over twenty-two miles but the sea is generally calm and there is seldom any difficulty, although the voyage from here to *Natsuko* is a difficult one if a good tide is not caught. As noted above, the sea in this region recedes two and one-half miles from the shoreline at low ebb. But even if the tide is in, it is too shallow to row a boat near shore and they have to launch their boats on a tide and keep over a mile from the coastline.

Twelve miles north of *Noteto* the second ferry runs from *Natsuko* (called *Rakko* by the *Sumerenkuru*) to *Kamukata* in Tōdatsu, a distance of about ten miles. The sea is calm but the waves beat strongly against the cape and the tide falls too drastically to launch a boat. As fish are few here and other foods hard to get, it is an inconvenient place, so the savages generally use the *Noteto* ferry. However, when the wind is not fair or the sea is stormy in winter, they use the *Natsuko* crossing to take advantage of the shorter distance. The third ferry is at *Wage* about fifteen miles further on. Like the other spots, the tidal conditions make sea voyage to it almost impossible. From *Wage* one crosses to *Otsutakabāha*. This passage is two and one-half miles and the sea is calm but, owing to the narrows, there is a rapid tide race where, in bad weather, the angry waters can swallow a boat.

The fourth ferry is called *Bokobe* and is taken to *Washifuni* in Tōdatsu. The distance is about three and one-half miles and there is a strong tidal current as at *Wage*. The fifth ferry is at *Birowakasei* about ten miles from *Bokobe*. From here one crosses to *Waruke* by rowing north along a small peninsula on the Tōdatsu coast, but it is about twenty-four miles by sea and the rise and fall of the sea tides make the voyage so rough that it is never safe and comfortable. The sixth ferry is at *Ishirao*. It is about thirty-six miles from the fifth ferry. From here one crosses about ten miles to *Buiro*, but the tidal race is especially rapid and, from this point on, the distance between island and continent becomes greater and greater as one goes north and the waves are rough and the voyage difficult.

[11] In this ancient system where the day was divided into twelve periods, each of two hours, midnight was the ninth hour and each two-hour period from midnight to noon was numbered, respectively, 8–7–6–5–4. Noon again was the ninth hour and those periods from noon to midnight were likewise 8–7–6–5–4. Therefore the hours 9–8–7–6–5–4 occurred each twice during the span of the day. Rinsō's eighth hour is either 2 A.M. or 2 P.M. and his fifth hour is 8 A.M. or 8 P.M.

[12] Mouse—North. Boar—North-northwest.

[13] Dragon—East-southeast. Sheep—South-southwest.

The seventh and last ferry is *Tamurao* about twelve miles from *Ishirao* (Rinsō did not go to this place and so could not go into detail). From here to *Rakata* in Tōdatsu the voyage is about twenty miles. The *Sumerenkuru* say that as the waves of the northern sea come into the strait here, boats in this neighborhood often come to distress.

Thus we conclude our outline of the natural features of the island. I had to describe the seascape and the facility in using inlets and bays in detail, but the subject is so complex that I will only write this introduction and later will make an illustrated coastal map in detail.

APPENDIX

On the east coast, about two and one-half miles from *Shiranushi,* is a place called *Kogohau* where lies a ruined fort called *"Chashi"* in the native tongue. It is shown in the illustrations. There are embankments on three sides and outside of them are waterless moats. When, where, and who constructed it? We do not know the names or dates connected with it. It does not seem to be the work of the aborigines.[14]

Rinsō could not go from Cape *Shiritoko* in the East to *Nanio* and beyond in the west, a stretch of coast some 340–360 miles long. Therefore he could not describe the area, its natural features and the customs and manners of the natives in detail. But from what the natives told him he could guess at things so he dictated in addition as follows:

About forty-eight miles from *Shiretoko* lies *Kukio.* The coast between is a perpendicular cliff containing no place where a boat may safely approach, so none of the natives are familiar with this area. In the interior of this coast, past *Kukio,* lies *Run, Merukoa, Nui, Hirowo, Ratawo, Hekachomuwo, Shae, Hirento,* etc. The region for some tens of miles round about is inhabited only by the *Orokko* and *Sumerenkuru* whose number it is not possible to estimate. The natural features are mostly bays and dunes like the coast from *Tonnaichiya* to *Shiretoko* in the south. There are many lakes and swamps as on the west coast inland from *Noteto.* It is said that the savages hereabouts formerly went to Manchuria to pay tribute, but that now they never go.

On the west coast, about forty-eight miles north of *Ishiro* is *Kauto* where the coast ends in the extreme northern tip of the island. The distance from there to Tōdatsu is about the same as the distance to Tōdatsu from *Noteto* or from *Itoi* farther south. This entire region faces the mouth of the *Mango* River; the water of the sea is less salty and as it is supplied by the tides of the Northern Sea there are ample trout, salmon, and other fish upon which the savages feed, which makes for a numerous native population. The number of *Orokko* and *Sumerenkuru* communities is about thirty-four or thirty-five. Three of these are especially large, each containing several dozen hamlets. Chiefs, called *Harata* or *Kashinta,*[15] and appointed by the authorities in Manchuria, live here. They sometimes go to Manchuria to pay tribute. When winter comes and the sea freezes, the *Santan* come and live and trade with them.

Between *Kauto* and *Hirento,* about fifty miles east of *Kauto,* the coast forms a big cape. It has plenty of cliffs and stony beaches like the coast between *Taraika* and *Kukio.* Because of the heavy sea it is so rough that boats cannot make a landing. Only between mid-spring and early summer, when masses of ice float down from the north, do they row off to hunt sea leopards playing in the icebergs, for only then is the sea sometimes calm.

The natives here live mostly along the coast and rarely in the interior, although in the interior along the banks of the river *Tomo,* one of the largest rivers on the island, there are some twenty-four villages of *Orokko* and *Sumerenkuru.* They live like the other natives, by hunting game whose furs they exchange with the *Santan* and by fishing for trout, salmon, and other fish upon which they live. The river *Tomo* rises in the region of the source of the river *Shī,* runs some score of miles to the northeast, passes through a lake near *Nui* on the northeast coast and runs into the Eastern Sea. Since it runs slowly and has few rapids, boats are not wrecked. Game is plentiful on the banks and fish numerous enough in the river to support the natives so that many natives of the east and west coasts pass through here, exchange gifts, and even marry. From the east they go by the river to *Taraika* and *Shī.* In the season of snow and ice they cross the frozen river by dog sledge. From the west they take the trail by the way of *Itoi* and *Mukatchion.*

[14] Most certainly a native construction as this type of walled and moated fortification (Ainu *Chashi*) was commonly erected for use in time of war.

[15] *Harata* from Manchu *Hara* "clan" and *Da* "chief" or "head." *Kashinta* from Manchu *Gashan* "village" and *Da.*

These above paragraphs have been set down by Rinsō from what the natives told him, so they may contain mistakes.

PRODUCTS

There are no strange species of grasses. There are weeds everywhere. There are no worthy flowering plants. There are no miscanthus. There is no bamboo, not even small bamboo, although bamboo grasses do grow near *Shiranushi*. Trees are plentiful in this island as are small bushes, but the wood is generally inferior, there being little superior timber or even large trees with the exception of spruce, fir and *Shunku*.[16] Only fir and spruce grow in the areas burnt over by hill fires. They grow tall and upright as if they were bamboo. Other plants are like those on Yezo, but limited in species. There are no mountains with sulfur deposits and, as far as Rinsō could determine, there are no volcanoes and hot springs. There are no strange minerals. The coast between *Ateke* and *Itoi* produced gypsum. There are no birds different from those on Yezo. In the depths where the alien savages live, the wild geese nest. Those geese who have lost too many feathers to fly, swim in the lakes and streams. They are caught by the savages who stone them to death, club them, or set their dogs on them.

There are two kinds of beasts which are not found in Yezo. One is called *Tonakai*;[17] its body resembles the deer and its face the horse. Its many branched antlers, covered with fur, are too soft to hurt one. Its tail is as slender as that of a cow. In the southern part of this island, they live in the hills and are hunted by the savages for flesh and fur. In the interior, the *Orokko* use them for they are timid by nature and easily tamed.

In the "Miscellaneous Writings at Night" it says: "that which resembles the reindeer, but is larger than it, is called *Kandajikan*. Perhaps it is a sort of reindeer. Its fore is tall and its rear short. It is strong. Its hair is rough and long and one can make a warm coat of its fur. Its antlers are flat and thick and can be used for a bow or for a tool of some sort. Riding a horse bareback, one hunts it with bow and arrow. It is very profitable."

[16] Correctly *Shungu*. *Picea jezoensis* Carr. Yellow spruce.

[17] *Rangifer tarandas*, Linn. Reindeer.

The other is called *Rikinkamoi;*[18] in shape like a hind, but with tusks. It is black and as large as a dog, and the savages hunt it for fur and flesh.

The marten, which lives in the south, is yellow and inferior. It becomes more and more black as one goes into the interior. The blacker the better the sable fur. The Manchurian savages are very partial to this fur.

In the "Essays by a writer who dwells north of a pond," it is stated that in Japan people set the highest store on black foxes, then on martens, and then deer, badger, and monkey. Only persons of the rank of king or prince are permitted to wear black fox fur coats.

Offshore from *Taraika* in the east, to *Noteto* in the west, are many sea beasts. In the spring during the herring season, these beasts appear off *Taraika* and gambol among the waves like seagulls and dabchicks. The sea fish are similar to those found in Yezo. However, in the western seas there are small fish resembling perch which are called *Hatchutcheffu*[19] and *Arukoi*.[20] The first is three to five inches in length; the second eight to ten inches long. They seem to be what are called *Seigo*[21] in the Yezo dialect, and gather in masses in the late spring. In every valley stream eels are found in stoney beds, but they are not eaten by the savages who are afraid of their diabolical shapes. From late spring to midsummer, whales are seen off the coast from *Shiranushi* to *Kushunkotan*. They disappear, after the herring season; no one knows where. In lake *Taraika* many gibels are found more than one foot in length. Their shape differs somewhat from those of Japan. The seas of this area have many scallops, while oysters are found in *Toufutsu Bay* and *Ushihoto Bay*. In the deeper water along the coast from *Noteto* to *Wage* there are many flatfish but they are small, being no longer than two to three inches. How many varieties of fish there are is not known, for when the nets are cast only these fish are caught. In the deep waters off the coast of *Chakagai*, a salmon is found whose flesh is very red, differing thus from the average. Insects and worms are the same as in Yezo. Mosquitos and gnats there are in great quantity.

End of Book One

[18] Correctly *Rikiniamui*. Generally identified in Japanese works as an antelope but I believe more correctly noted by Batchelor as the moose-deer.

[19] Young *Arukoi*. See below.

[20] *Leuciscus hakonensis* or *Leuciscus cephalus*.

[21] Perch.

BOOK TWO

THE PEOPLE OF SOUTHERN HATSUSHIMA

These people, for a distance of about 360 miles from the southeast point of the island, are about the same as those on the island of Yezo, although there are those whose eyebrows are not connected and, in general, they have less thick beards. People in some localities cut their hair and in others, it is worn longer than on Yezo. Earrings are the same as those on Yezo. Women are tatooed in less brilliant colors than the women of Yezo and some, in the north, do not tatoo at all. Their hair is worn shoulder length. There are a greater number of beautiful women here than on Yezo.

Bark cloth for clothing is produced here as on Yezo.[22] However, they do not have sufficient *Ohiyafu*[23] or *Tekkapu*[24] to meet all their needs and so they strip the bark from a plant called *Mouse*,[25] bleach it in water, spin it into yarn, and make cloth as we Japanese make hemp cloth. This cloth is called *Tederabe*.[26] These are the only clothing materials produced on the island, for although cotton is used, it is not produced domestically, being either brought in by the *Santan* or imported from Japan. In addition, they use garments of fish or animal skin in imitation of Manchurian garments. The gala garment of men is the same as that of Yezo. Women use the gala garment and sash as illustrated. They are imported by the *Santan* and trimmed with brass. As a matter of fact, even fish and skin garments are ornamented with brass. Colored silks and brocades come from the *Santan*. Clothing designs differ from those of Yezo as can be seen in the illustrations.

The natives of the northern part of the island differ somewhat in countenance from those of the south. Because of their habit, in winter, of wearing garments of dogskin, shoes (called *Keri* and resembling the *Karasutabi* of the Matsumae area) of sealskin and caps of bearskin, they are sometimes taken for aliens. Since it gets extremely cold in the north, the islanders there, young and old, make and wear leggings and shoes of fish or animal skin which is contrary to the Yezo habit of going barefoot.

[22] *Attush* or *Atsushi*. Elm bark cloth.
[23] Correctly *Ohyō*. *Ulmus laciniate*. Manchurian elm.
[24] Correctly *Nitapu*. *Ulmus japonica*. Japanese elm.
[25] Correctly *Mose*. *Urtica thunburgia*. Hemp nettle.
[26] *Tetaru* "white." *Be* "thing."

FOOD AND DRINK

In general, those things relative to food and drink are the same as in Yezo with these exceptions—that the Hatsushima people store plant roots in quantity and consume great amounts of the oil of sea animals.

The fish they eat are: salmon, trout, herring, *Hachutsucheffu*, *Arukoi*, and various other fish. The meats they eat are: sea-otter, seal, dog, fox, otter, *Hoinu*,[27] reindeer, and antelope.

The plant roots eaten are: *Kito*,[28] *Happu*,[29] *Irerau*,[30] *Toma*,[31] *Shitorokina*,[32] *Ichirabo*,[33] *Unishiko*,[34] *Chimakina*,[35] *Ikema*,[36] *Ikanokai*,[37] *Raibeushi*,[38] (also called *Moshikaurhe*), *Homeshu*[39] (also called *Wotakuru*), *Chinrata*[40] (also called *Ryūekina*), *Toreppu*[41] (also called *Chito*), *Binkina*,[42] *Iteratara*,[43] *Fūureffu*[44] (also called *Katamu*), *Anneka*,[45] *Unehauu*,[46] *Chirikeshi*,[47] *Shirakuchi*,[48] *Habidon*,[49] *Imauri*,[50] *Chikuira*,[51] *Katsu-*

[27] The sable marten.
[28] Also *Kitu*, *Kitobiru*, *Penuffu*. *Allium victorialis*. Longroot onion.
[29] Also *Shitorukina*. *Heracleum lanatum*. Common parsnip. See below 32.
[30] Presumably *Irure*. *Polygonum weyrichi*. Knotweed.
[31] *Corydalis bulbosa* Dc. var. *rotundifolia* Maxim. Corydalis.
[32] See above 29.
[33] Also *Icharikina*. *Anthriscus sylvestries*. Woodland beakchervil.
[34] Unknown.
[35] Also *Chikappuni*, *Sewa*. *Aralia cordata*. Spikenard.
[36] Also *Penup*. *Cynanchun caudatum* Maxim. Swallowort.
[37] Unknown.
[38] Correctly *Moshiokarabe*. *Adenophora verticillata*. Ladybell.
[39] Unknown.
[40] *Petasites japonicus*. Japanese butterburr.
[41] Also *Tsureppu*. *Lilium glehni*. Glehn's lily.
[42] Unknown. Possibly *Angelica ursina*.
[43] Unknown.
[44] Correctly *Fureppo*. *Ribes latifolium*. Wild red currant. *Katamu* or *Katani* is *Vaccinium Oxycoccus*. Small cranberry.
[45] Presumably *Anekani*. *Ribes sachalensis*. Wild currant.
[46] Unknown.
[47] Correctly *Chirikishini*. *Actinidia kolomikta*. Baneberry.
[48] Here the Japanese name is given for the native *Kutchi*. *Actinidia arguta*, Planch. Western baneberry or Taravine.
[49] Presumably *Habetuni*. *Viburnum furcatum*. Forked viburnum.
[50] Unknown.
[51] Unknown.

tsufu,[52] *Shakku-Toreppu*,[53] *and Chukkutoreppu*.[54]

The fruits they eat are: *Shikerebeni*[55] and *Niseu*.[56]

Plant roots are collected during the spring, summer, and autumn, and are dried and stored in warehouses. This is the task of the women. I cannot illustrate these roots and fruits because no sketch is useful unless made on the spot. Most of their food is cooked by boiling in plain water. Salt is used only occasionally, and then sparingly, as they dislike salted food. Before eating, they pour sea animal oil on their food and give as the reason that some plants contain poison and cause belly aches which same can be avoided if the food is first drenched with oil. Oil is for them as necessary as *Miso*[57] and *Shōyu*[58] in our country. If the take from the summer hunting and fishing is poor, then oil will be short in the winter. In such a case they go to the alien people of the northern part, taking with them on dog sleds, axes, knives, old nails, broken pots, etc., to barter for oil. The oil thus obtained is poured into fur seal intestines (their usual container for oil), loaded on the sleds and hauled home through the snow and cold. They must have oil.

The Matsumae clan has paid little attention to the administration of this island, probably because of its isolation in the northern seas. The clan administrative offices, called *Kaihōbanya*,[59] are not established any further north than *Ufuitomari* on the east coast and *Woraunetomari* on the west coast. The officials, called, as in Yezo, *Otona* or *Kozukai*,[60] are appointed no further north than *Shiretoko* on the east coast and *Wonitsuho* on the west coast. Therefore, some of the inhabitants of the northern areas do not know that this island belongs to Yezo. Furthermore, these natives are not settled but roam from place to place, while those who are single or widowed live with this family or that family whether or not they are related or even acquainted. Therefore, Rinsō was unable to make an accurate calculation of the population, but estimated the following:

Along the east coast from *Chashi* to *Taraika* are about 314 dwellings and 2,041 men and women.

Along the west coast from *Shiranushi* to *Riyonai* are about 124 dwellings and 806 men and women.

This is a total of 438 dwellings and 2,847 heads. The number of dwellings and the population of the *Orokko* and *Sumerenkuru* in the north could not be observed, partly because he did not see all their country; partly because their language is most difficult to understand. The *Orokko* are especially difficult to count because they are nomads. Roughly speaking, these people number about seven-tenths of the population of the entire island and only about one-third of them have customs similar to those of Yezo.

HOUSING

For a distance of 125–145 miles from the southern tip of the island the method of making houses is no different from that on Yezo. In the north, about one to two out of every ten of the houses are similar to *Sumerenkuru* dwellings.

Some of the natives live in caves in the winter months but this custom varies according to local temperatures. The cave dwellers are forced to their unwilling practice by an unendurable cold. By September-October snow already covers the earth and they start to make their caves. They leave the caves in February-March although the snow has not yet left the earth. However, if they do not leave by that time, they will fall ill.

Their method of making a dwelling cave is as follows: First, a site is selected on the side of the mountain; then a pit is dug down to a depth of three to four feet; pillars are erected as illustrated and the cave is roofed with bark which is, in turn, covered with leaves and twigs. Eaves are provided at the entrance where a ladder is set up. In addition, a cook stove is made and a channel constructed under the cave to the open air so that the dwelling does not fill with smoke. Inside the cave and outside the pillars, rough straw mats are spread along three of the walls and on them are piled fine straw mats for bedding. The center of the cave is an uncovered earthern floor. It is then easy for a visitor to come into the cave with

---

[52] Unknown.

[53] Presumably *Shikuturu*. *Allium Schoenprasium*. Chive.

[54] Unknown.

[55] Also *Shikeripani*. The nut of *Phellodendron amurense*. Amur cork tree.

[56] The nut of *Quercus crispula* and *Quercus dentata*. Varieties of the Mongolian oak.

[57] Bean paste.

[58] Soy bean oil.

[59] At that time the term *Kaiho Sukui Kōeki* (lit. "trade for opening up and assisting") was used in reference to the Ainu trade because it was thought of partly as a commerce entered into for raising the native standard of living. From this term came the name of the local trade and administration offices.

[60] Both are words for local chiefs appointed by the Matsumae.

his boots (*Keri*) on and to sit on the mats with his shod feet on the earth floor. In the depth of winter, the cold is sometimes so severe that a fire is built in the center of this earthen floor around which all sit. Generally, however, it is so warm in the caves that this hearth fire is not needed and only a small fire, used for lighting tobacco, is kept stored in a stone bowl called *Unjiomaffu*. Shelves are built outside beneath the eaves for the storage of food and drink used daily, and for other daily wares. Precious goods and provisions are kept in a warehouse.

TOOLS

Iron pots are imported from Japan except in the north country where they are bought from the *Santan*. I illustrate the ordinary model of the latter type pot (which varies in size). The natives make earthen pans with a diameter of seven to eight inches. Two catches are attached to the interior and the handle is made of leather (*Tonari*) and covered with birch bark, lest it burn. This is illustrated. Rinsō did not know the details of the manufacture of this pan which was originally called *Toyeshu* by the natives but which is more commonly called *Kamoishu* which means a holy pan. Wooden bowls usually come from Japan. Those made by the natives are found in the north and are illustrated.

The natives make their own boats, a model of which is shown. Since no good lumber is produced on the island (a matter later explained under the heading of Industries), they are made of the genus willow or the trees called by them *Yayeni*.[61] Their method of manufacture and fitting out does not differ from that of Yezo, but because of the thinness and flexibility of the boards, they are more dangerous to use than Yezo boats.

The island has a special type of sled for use whose shape differs from that of the Yezo sled. The rope is of leather and the pole is of wood, covered at the fore end with iron from which a nail projects. The snow shoes are as illustrated. The spears are of Japanese and *Santan* manufacture with an ordinary shape and a helve about six or seven feet in length. The bows and arrows and other various utensils of daily use are like those of Yezo.

INDUSTRIES I

The most important industry is dog raising. The poor cannot afford to keep them, but every wealthy family feeds five to thirteen dogs. They are all for use, although many bitches and puppies are set free. As illustrated, the dogs are fastened separately to a cross bar attached to poles set in the yard and are not allowed freedom of movement except for ill or worn out dogs which are allowed to roam. This system is maintained even in the season of snow and cold, for no special cave is made for the dogs. How they are fed is not known in detail. They probably are fed two to three times a day on boiled fish (raw fish is not given them), of which a portion sufficient for two to three dogs is placed in a wooden container called *Nimamu*. The dogs are not freed to eat. The master unchains them, leads them to the food and stands behind them, with a stick, while they eat in order that he may beat those who eat ravenously, to teach them manners. Puppies are tied and fed in the same manner except that they are not given bones but only finely sliced raw meat. There are many other examples of how affectionately they treat their dogs, as though they were children. In return, the dog loves his master and will not leave him night or day. In the true sense of the word, these people live with their dogs. When they go on journeys they are always accompanied by several, sleeping beside them at night and eating from the same bowl. A child, when he plays, usually plays with dogs and, as illustrated, often carries one on his back as though it were a baby while the puppy, for his part, is completely at ease at being thus carried. When the puppies have matured, the best and bravest are selected for domestic use and the feeble and useless, plus those bitches which are too small to feed their litters are killed by hanging; their hide being removed and their meat eaten.

When an adult dog is excessively lustful, the scrotum is opened and the testicles cut off. This is to prohibit excessive sexual intercourse and thus strengthen the bones. The removal of the testicles is illustrated. The dog has its paws fastened to a log and its muzzle bound with a rope. Several people hold the animal to prevent its moving or jumping. One of these people cuts the scrotum and removes the testes. The dog is then unfastened and after licking his wound for a bit, runs away with no sign of pain. However, this operation is always done with care to the season and the condition of the dog, for if it is not skillfully done, the dog will sometimes die. It is, therefore, only done by skilled people. The

[61] *Populus sauveolens*. Mongolian poplar.

actual technique of operation is not known to Rinsō as he did not hear the details.

Dogs are primarily used to haul sleds and ships or to hunt. There is a considerable technique in using them to haul. The unskilled person can drive, at most, four or five dogs but the skilled driver can handle eight or ten or more. If they want their dogs to pull a sled or ship, they first tie them in a line which is then fastened to a tree. (A dog or team will, if tied to anything, immediately begin pulling. Since a man cannot hold a team of three or four dogs, they always first tie the team to a tree while the sled is then yoked to the team.) [See fig. 1.] When all is ready and the team is unhitched from its tree, they at once start to run like arrows. A seven or eight dog sled team can run forty-one to forty-four miles a day. The dogs of this land, quite unlike those of our country, like to haul.

The art of driving a team is illustrated. The driver sits in the sled with a wooden stick in his hand. He cries *"Toto"* to bring them back into course, and he can stop the sled by thrusting the stick in his hand into the earth. The sled runs on the ice along the seashore. On the ice cakes the sled is always pitching and rolling and the driver must keep constant watch. If he makes a mistake, the sled will instantly overturn, he will be thrown to the ice and injured and the sled will keep going until it is stopped by a rock or tree root. If so halted, the sled will be broken up, the load destroyed and the team entangled with the harness. The driver can make his way to the spot where the wreck occurred, but repair is difficult. Rinsō experienced this hardship, as he often drove dogs.

Hauling a boat by dog team differs little from sled hauling, but the difficulties are far less. A strong, fierce, and experienced dog is placed in the lead and is called *Ishioseta,* "the guide dog." If this dog is bad the other dogs will be neither diligent nor attentive. The price of a good lead dog is therefore high, running from one or two axes to five or six for the best. Even short dis-

FIG. 1. Preparing a *Hatsushima* dog team and sled for travel.

tance travel is done with dogs on this land, although in such case, the quality of the dogs is of little concern, even bitches and puppies being used. When the trail is too steep, the natives will help their dogs pull.

When used for hunting, these dogs fight well with fierce animals, going deep into the mountains to drive them out and being of unmeasurable assistance to their masters.

When a domestic dog dies of disease, his hide is taken but his meat is not eaten.

BOOK THREE

INDUSTRIES II

The products of the fishing industry are similar to the catches of Yezo, being salmon, trout, herring, etc. The herring is especially abundant, schooling several times in the spring and making the whole sea white like the water used to wash rice. The natives then go out with nets for a big catch. At night they fish from the shore as shown by illustration (ed. note: this illustration cannot be found). Neither of these methods of fishing are common on Yezo.

Hunting has no special features. However, since the hide trade with Manchurians and *Santanese* is most important and is diligently practiced, those details which do differ from Yezo will be explained and illustrated as follows:

Sable is caught by a snare. A log is set across a stream in either a ravine or a flat area and a snare is laid on it. When the animal tries to pass across this log bridge, the snare is tripped, fastens on the animal and throws him into the water. In its struggles to rid itself of the snare, the animal is drowned. This is similar to the spring snare used in our country, but better, in that it is set on the side of the log so as to throw the animal into the water.

Antelope is also caught by snare. Since this animal inhabits the mountains, the snare is laid, as illustrated, wherever the paths of the animal are found between rocks.

The reindeer and the bear are hunted with bow or with spear.

Fox hunting is illustrated. A tree with branches is set up and a fish is hung from it. The fox, seeking the fish, will climb the tree and be snared among the branches while climbing. There are many other ways of catching fox but since Rinsō did not see them, they were not sketched.

Otter hunting is also illustrated. A catapult, baited with fish, is made and placed on a stream. The otter seizes the fish which hangs by a string and thereby triggers the catapult which seizes it. There is another type of automatic catapult called *Gūama*[62] which is set on trails of bear, fox, etc., in the mountains and plains. This is not illustrated because it can be seen in Yezo.

Arrow poison is used for bear hunting but the poison is not as effective as on Yezo. If the first arrow does not kill, the hunter will pursue it, still shooting arrows. If he exhausts his arrows and the animal is still alive, he attacks it with his spear. If this is unsuccessful he closes hand to hand with the enraged beast. This shows how brave they are.

Sea animals such as the otter and the seal, are also hunted. From early summer to late autumn, a bundle of timber bound like a raft is set afloat. When the seals emerge and mount this raft the natives set out for them in boats and, as is the case with the fur seal hunt of Yezo, attack with throwing harpoons or long stabbing harpoons. In the winter, fur seals on the ice pack are attacked with the long harpoon as illustrated. Hunting is done in groups of three or four men who go into the mountains for long periods. They take enough dried fish, etc., for about two days, intending to live the rest of their hunt on their catch. If their provisions are exhausted and they make no catches, they will, as long as they are on a trail, pursue an animal for three or four days without food. This shows how persevering they are.

TRADE

The natives of this country come to trade in *Shiranushi* in our territory. They also trade with the *Santan*, *Orokko*, and *Sumerenkuru*. Trade is all important as it furnishes them with their livelihood. People come to *Shiranushi* from as far away as *Funuppu* (distance unknown) on the east coast, and *Nayoro*, (about 120 miles from *Shiranushi*) on the west coast. These come throughout the year to hunt and fish as well as trade. The northern peoples engage exclusively in trade and come to *Shiranushi* once or twice a year. The goods traded are: by us—hides, rice, liquor, axes, cotton, tobacco, pins, kettles, etc.; by them—brocade, jewels, pipes, eagle feathers from *Santan*, *Tonari* (made from hide and used for rope), etc. Some of the natives come to *Shiranushi* to get employment on farms or to engage in business. Trade with the *Santan* goes on all year. The islanders do not go to *Santan*

[62] Correctly *Kuama*. A spring bow.

but the *Santan* come here. The *Hatsushima* people offer hides, axes, knives, etc., which they have either made themselves or traded for at *Shiranushi* in exchange for the cotton, brocade, jewels, pipes, tobacco and pins, etc., of the *Santan*. The *Santan* on arrival build a temporary dwelling on the beach, and combine trading with hunting in the mountains. Sometimes the natives go to the *Santan* post to trade, sometimes the *Santan* go to the native houses and at times, trading is conducted in the street of the village. Usually, during this period, the natives will make daily visits to the *Santan* post. The trade is large and the relationship between the two peoples intimate. This is because the *Santan* not only trade but engage as lenders of goods. The *Hatsushima* people are not enlightened. They will borrow much, not realizing that the price will be demanded later. Often unable to redeem their obligation, they will take to the mountains until the *Santan* leave. But when the *Santan* return the following year, they ask for payment of the obligation, and if the debtor cannot afford this, they take away their brothers as hostages. There are of course no written contracts and the *Santan* often make false demands. As a result quarrels occur; but these are generally reconciled and the *Santan* will leave goods on loan, as usual, when they depart. The case is similar when the *Orokko, Sumerenkuru,* etc., come down from the north to trade. There is trade in human beings. If a *Hatsushima* village has those who are poor, friendless, without relatives, feeble or infant, whether man or woman, they will trade them to the *Santan* for three to seven rolls of brocade per person, depending upon size. If the human being traded is cowardly or feeble, the price is not set in brocade but in miscellaneous wares. Yezo natives from the *Riishiri* region of the northern coast often come to *Hatsushima*. The *Santan* will kidnap the bereaved of these Yezo people (if there is no objection from their relatives) and sell them.[63] Therefore, one often sees women with tatooed mouths in *Santan* or *Sumerenkuru* villages.

The islanders formerly crossed over to Manchuria several times a year but, of late, Japanese goods have become so widespread in Hatsushima that they cross over only once every two or three years. They take sable hides (the best) and also otter, fox, etc., pelts to offer as tribute and to make trade at *Deren*, the provisional office in Manchuria. The goods they receive are the same as those traded by the *Santan*, but the Manchurians offer them in larger quantities at lower prices, so it is worth the difficulties of the trip.

The offering of tribute to the Manchurians will be explained in detail in the appendix.

INDUSTRY III

The islanders forge metal, which is not true of the Yezo people at present. (Presumably the Yezo made their metal ware before iron goods from Japan came into the island. Some of the aged people in the Soya region of the north are well experienced in this art, but now that Japanese goods have penetrated the entire island, the practice has been given up.) Forging on *Hatsushima* was not introduced from some other country, but devised by the natives themselves. There are two kinds of bellows as illustrated. The bellows on top has a bag of fish skin with a bar of wood at the end for a handle and a jointed wood tube for directing the wind. The bellows in the sketch below has a bag of seal skin. The anvil is a stone with a flat surface. The hammer is imported from Japan but an axe or any tool suitable for hammering is substituted for the hammer. A place for work is arranged under a special eave set on the side of the house. Forging is done as illustrated [fig. 2]. Two bellows are placed on the earth with their tubes side by side and covered by a cloth which has one opening in it. One man places his hands on the bags and pumps air by alternately pressing and releasing. The air current is directed out of the single opening of the cloth and the flame produced is just as hot as the one we get with our bellows. A second man sits next to the bellows forging the iron and making tools. In working the sealskin bellows, the air pipe is held in the left hand while the right hand holds the bag and, at the same time the bag is pumped, it is also twisted to avoid air escaping. The iron being forged is invariably from Japan. No steel is used. Usually ship nails or any kind of scrap iron is utilized. These are obtained by barter at *Shiranushi*. Tempering procedures are the same as those used by Japanese blacksmiths. Steel, which is hard to hammer, or iron pieces to be welded, are smeared with ashes or mud and put into the fire for tem-

[63] This sentence in "Hokui Bunken Roku" reads, "These people, while engaged in trade with the *Santan* will kidnap the bereaved not only of their own tribe but also those of other tribes and sell them." The difference in meaning is a very important one but I have chosen to follow the original.

FIG. 2. A *Hatsuhima* forge showing the use of bellows, anvil and grindstone.

pering. After an axe, sword, or any cutting instrument is fashioned, the edge is tempered, as in our country, by putting into the fire. However, because of a lack of proper tools nothing fine can be made. Edges are dull and not worth appreciation. Every type of iron imported from Japan is of use here. It should be noted that they do not whittle wood by thrusting the knife from, but by pulling it toward, them. Therefore they manufacture a knife with the edge on the reverse side as illustrated.

CROWNING, MARRIAGE, FUNERAL, AND ANCESTRAL RITES

The crown is the same as in Yezo. It is made of wood. There is no ceremony of coming of age when the crown is put on for the first time, but in the event of the bear and other festivals all natives wear a crown.

Marriage does not differ from that in Yezo. There are some slight differences in ceremony but Rinsō did not observe them personally. Now it is the custom on Yezo that the husband is idle and wife diligent and that the clothes of the entire family be of *Atsushi* cloth woven by the wife. In this island, on the contrary, the clothing of both men and women is imported since *Atsushi, Deterebe,* etc., although made, cannot be produced in quantity owing to the lack of plants and trees. Therefore, the man must busily engage in hunting and in trade with our country and with the *Santan* in order to clothe his wife. Since women enjoy a high status and since their clothing is fitted with various accessories, the result is that here the husband works hard and the wife is idle, contrary to the Yezo custom.

Funeral practices vary considerably from those of Yezo. When a chieftain dies his abdomen is opened and the intestines removed. A bed, such as is illustrated, is set up outside the house and the body placed on it. A woman is charged with washing it, pouring water over it and drying it

in the sun every day to prevent corruption. This is called *Ufui*. If, after the lapse of one year (a coffin cannot be completed till one year after the death), the body does not smell, the woman is rewarded and given clothes, tobacco, liquor, etc. If, however, there is any corruption of the body, the woman is killed and buried and then the corpse is buried. (Killing of the woman seems to have gone out of practice in recent years.) The coffin is not completed for a year, despite all efforts, because of its size and elaborate engravings. After it is completed the body is put into it and a funeral service is held. However, the coffin is not buried, but left exposed on the earth. Women are buried in the earth and grave posts are erected as illustrated. In case of death, not only the father, children, brothers, and relatives, but also those unrelated to the dead gather to mourn, which practice, while also found in Yezo, is most notable here. Close observation of these people leads to the conclusion that sorrow is the emotion they feel deepest. This may be seen from the fact that they will refrain from discussing a deceased even though years have elapsed since the death and then if some necessity forces them to mention his dying hours, even those unrelated will speak of it in tears. After a bereavement they will not discuss the deeds of the dead and, if that matter enters into a conversation, they are overcome with emotion. For this reason, Rinsō could not discover in detail how funerals were conducted.

The funeral of the poor does not differ from that on Yezo. It is the practice in Yezo to burn the house of the dead. This is done here only if death is come by unnaturally.

Ancestral rites do not differ from those of Yezo. Bowing and other forms of salutation are the same as in Yezo. However, when two persons meet after a long absence they will, as illustrated, sit down closely facing each other, clasp each others' hands about three times, and then,

FIG. 3. Filing the teeth of a captive bear in *Hatsushima*.

both moving backward, each will question the other about his fortune and talk about his own.

The bear festival is almost identical with the one in Yezo. However, here the bear is raised for two or three years and the festival is held after maturity. Therefore, in fear that the captive bear might break his cage and attack persons, his teeth are, from time to time, filed down. This is done, as illustrated, in the following manner: First, to secure the bear, a snare of rope is made and put into the cage. The ends of this rope are held from outside the cage by persons on opposite sides. Then a pole is thrust into the cage from one side in order to corner the bear. This done, the people on the rope snare draw on it, which fastens the neck of the bear so that he can move but feebly. Then the cage is entered, the limbs fastened, and the bear removed. The teeth are now cut down with a cutting tool similar to a saw, being a knife with an indented edge which is manufactured by the islanders [fig. 3]. On Yezo, the bear is killed by being beaten to death. On the island it is shot to death. This bear festival is practiced also by the *Orokko, Sumerenkuru, Santan,* and *Korutekke*[64] of the north.

THE OROKKO

At *Taraika,* on the east coast north of the *Shi* region, lives an alien people called the *Orokko.* Their language and appearance differ from Yezo. They do not cut their hair—the men dressing it into long bundles which are worn either to hang down the back or upon the neck as illustrated. Neither their psychology nor their customs are clearly known since Rinsō had but little intercourse with them, but they have a vulgar appearance showing both boldness and rudeness. The women do not wear their hair loose but dress it at the back of the head or make it into two long plaits worn down the back, as do the men, or wear it atop their head. They are more beautiful than the women of Yezo and moreover, are more vain. Bathing and powdering are not general, but many of them wash their faces, comb their hair and decorate themselves each day. Their earrings differ from those of the southern part of the island. The man's ring is smaller and the woman's bigger and are, as illustrated, covered with a number of stones. The clothing is of hide, usually sealskin, while cotton clothes are all imported from *Santan.* As in the southern part, leggings and shoes of animal or fish skin are used. Men wear, over their loin cloth and beneath their garments, an apron which, as sketched, is decorated with seashells. This garment differs from that of the south in being very short, reaching only below the waist. One can see how difficult it is to wear such a garment in addition to leggings and a loin cloth. Women, being too shy to expose their skin, wear long garments reaching to the heels and, underneath it, a loin cloth and leggings. These garments, as shown, are trimmed with copper. Matters of food and drink resemble those of the south. Meats, fish, plants, and fruit are eaten. These people do not settle in one place but are always on the move seeking the best sites for water, hunting, fishing, and plants. Provisional homes are built where they can go and several families will jointly occupy a house and engage in trade or manufacture. Their movement is not unlimited, but is confined within regions. They usually take journeys to a limit of ninety to a hundred miles, although in the winter months when the catch is bad, they will travel 240 miles. Therefore, they have nothing which can properly be called a home. Their provisional houses are made as follows: from early summer to mid-autumn they strip the bark from trees to cover the house and from late autumn to late spring when the trees are too hard to strip, they cover their houses with birch bark which has been stored or with a fishskin material similar to the oil paper of Japan. Both the birch bark and the fishskin are sewn together with *Mouse* threads in sheets which form oblongs about three feet by four or six yards if bark is being used, or about four yards square if the material is fish skin. These sheets are kept in storage for use in the winter months. The *Sumerenkuru* of the north store the same materials for the same use. Birch bark is not used in the winter snows lest it should freeze and break. During that period, fishskin is used for roofing material. Warehouses are built as sketched and therein are stored the fish and meat used as daily food. Since these storehouses are built by simply felling trees where they happen to be, and then are abandoned when they move on, they can be seen everywhere on the seashore and in the swamps north of *Taraika.* These people are strenuous hunters and fishers and are constantly storing large quantities of meat and fish in warehouses. Since they will leave a place when the catch falls off, and move on even though there may be ample food stored, there are many ownerless storehouses stocked with food. In this

[64] The *Korutekke* are the Goldi tribe of Manchuria.

manner they can, if they are not able to find a catch in a new location and are threatened with hunger, return to old storehouses in order to eat. Their hunting and fishing methods differ little from southern *Hatsushima*. The only difference is that here they use the reindeer instead of the dog. Almost every family feeds this animal; the number being kept varying with the resources of the family. The rich keep about a dozen each. From early summer to late autumn, they are pastured in meadowland and, in the winter when the grass is gone, they are brought into the mountains to feed on the ivy growing on the pines. When these people move, they transport their goods on reindeer back. Therefore, this animal is essential and it is well taken care of. The reindeer is gentle by nature and fears the dog. It cannot therefore exist with a tribe which keeps dogs.

A poem of the Emperor Kenryu says:

Beyond the seas eastward is a tribe which uses the deer
They have the deer carry as we in China use the horse
Their deer looks like the common deer but is a bit larger and is called Kendatsukan.

Rinsō observed nothing of the ceremonies of crowning, marriage, funeral, and ancestor worship so can describe little, save that they never marry one of another race and that in case of death the body is placed in a coffin and, as illustrated, exposed in public. If one man kills another in a fight or murders another secretly and this becomes known, the relatives of the victim do not take revenge, but enter an accusation against the murderer and seek to have him atone by surrendering his wealth. This is said to be true of the *Sumerenkuru* of the north also. Their tools show us nothing new except that they have a river boat which they make and which is of excellent solid construction—its shape is illustrated (ed. note: this illustration omitted). Their other tools, including their sea-going boats, are produced by the southerners. Their bows and arrows resemble those of the south, save for the quiver which is illustrated in the section on the *Sumerenkuru* and, as in the south, each tribe of this people has a chieftain. Rinsō has forgotten their dialectical term for this leader. The actual conditions of life of these people is obscure since Rinsō only saw them but did not, as in the southern part of the island, live among them.

BOOK IV

THE SUMERENKURU I

About 360 miles north of *Shiranushi* on the west coast, is a place called *Kitoushi*. North of that point lives an alien people called the *Sumerenkuru* who are subject to Manchuria. While they dress their hair and wear their earrings as do the *Orokko*, they are nevertheless more refined [fig. 4]. They have a completely different language which is often hard to understand. Their clothing is like that of the *Orokko*, but since they trade often in Manchuria, they wear many Manchurian-made cotton clothes. The women do not differ from *Orokko* women except that there are a greater number of beauties. There are no evidences of either bathing or makeup, but every day they wash their mouths and faces to keep their looks clean and handsome. Their attitude is much different from that of Yezo women. They are amiable to strangers, and although the difficulty of their language obscures much of their meaning, they greet one and chat. They are particularly friendly to men. However, no matter how beautiful a woman is, she has little chance of marriage and is little thought of unless she is skilled at needlework, a fact which makes them most eager to master this skill. As an indication of the high position of women among the *Orokko* as among the *Santan*, *Korutekke*, and Mongolian tribes, the laws forbid killing a woman no matter what crime she may commit. Illustrated, is a woman combing her hair. With water held in her mouth she wets the comb from time to time. Women usually dress their men's hair and sometimes men and women will comb each other's hair.

Matters relative to childbirth were neither seen nor heard. It was noted that the very young child is fastened to the contrivence illustrated, which is then hung on a pole suspended from the ceiling and a wooden utensil is placed underneath to receive the urine. This is done up to the age of four or five years. With the hands fastened and the legs barely movable, the child does not cry either because he enjoys the sensation of floating in air or else because it is the custom of the place. The child, being fed, is held in the mother's arms, while still in its cradle, and suckled as illustrated after which he is again hung up. There is little variation from the people of the southern part of the island in food and drink, although millet, buckwheat flour, wheat flour, and beans are imported from the continent. Since their cost in barter goods is great, they are not

FIG. 4. *Sumerenkuru* types.

eaten as staples, but only on rare occasions and with great relish. Meals are eaten according to the call of hunger, usually two to three times a day at the most. Immediately upon arising, men go to work; they return home about eight in the morning for a meal, which has been prepared meanwhile by their wives. Their methods of serving differ from those of Japan. Boiled cereals and side dishes are not eaten together. In the case of a family of say three members, the fish in the pot will be divided into three equal parts and served on three trays. After this is eaten, plant roots, boiled and dressed with oil, will be served in equal shares in three bowls and finally, in the same manner, wheat or millet gruel will be served. All items of the menu then are served and eaten separately. Generally speaking, they restrain themselves at table and do not eat to excess except at banquets. This may be due to a fear of consuming too rapidly that food which they toil to secure from the seas and mountains, and even then, do not get in great quantities. At banquets an order of seating is strictly observed, unlike the southern practice. The guest of honor sits at the bottom and others sit in order to the right and to the left. Liquor is not made domestically, but is imported from Manchuria. It is called *Aruka* or *Shochu*[65] in our country. It is served hot from a tin pot which has been heated in either hot water or hot ashes. An earthen cup imported from Manchuria is used and only this one cup is used, being circulated among all those at the banquet. The relishes are varied according to the occasion, several of them being listed below. (The wine bottle, tin cup, and the other wares used as cups, including lacquer ware imported from Japan, are illustrated in the section on "Tools.")

Dried trout and dried *Kitohiru*[66] (*Hake* in their language). Sliced fine, salted a little, peppered, and served mixed together.

Raw fish (trout, salmon, etc.) boiled and

[65] Distilled rice liquor.

[66] See above, note 28.

served in a bowl. The sea plants called *Shashi,*[67] *Kitohiro,* etc., are sliced and put into the water to make a sticky, somewhat salty broth. This is eaten with boiled fish.

Soya beans, *Kitohiru,* kidney beans, and other plants and fruits are well boiled, dressed with a fish oil and served as a salad.

A cake made of buckwheat flour is served with fish oil.

Millet gruel is used only as a relish because it is imported from far Manchuria. All these are the usual dishes and in addition, there are various kinds of cooked meats.

Each food is served in an individual bowl. If there are five foods there are five bowls but, in contrast to the usual meal, there are, at these banquets, no individual servings. One bowl of food is passed around according to the order of seating. The banquet differs from those on Yezo, in that here the host presses food on a guest and the latter refuses from politeness. Liquor is so rare in this region that many of the poor have no opportunity of sampling it. When Rinsō gave them liquor and a little tobacco, they were so overjoyed that they requested more, some of them doing so with great ardor. But when sugar was given them, they merely remarked on its sweetness and did not ask for more. This shows which things are the favorite of these northern people.

Of this race, some live in caves and others do not, according to local temperatures. Those who do not live in caves have dwellings about ten to sixteen yards square (sometimes they have an oblong shape) made of wood. This house is roofed with bark which is then covered with weeds and, to secure this roof against the wind, timbers are placed atop it lengthwise and crosswise as illustrated.

Inside the house, a hollow bench made of stone runs along the walls; where it ends at the door, it has openings on the top and sides so that it can be used as a cooking range. The smoke from the range passes through the hollow bench and, at the other end, is led out of the house by a wooden pipe. In this manner the house is kept warm during the cold of winter and cave living is not necessary. As in caves, the center of this house is an earthen floor and in the center of this is a rack of shelves on which are stored various household utensils and tools for daily use [fig. 5]. The doors are of wood and as in our country there is a latticed *Shoji*[68] here covered with fish skin. In winter the walls are plastered with mud to seal the house against the wind. Those who choose to live in caves during the winter have houses made in the same way except that there is only one door. There is a window in the roof which serves as a skylight and a bench of wood, not stone, runs along three of the walls. The only stove is a big one in the center of the house, beside which a shelf is placed to hold utensils. Rinsō saw the outside of cave dwellings here, but did not enter. Therefore, only the outside of one is illustrated. The interiors probably do not differ from those of *Hatsushima.*

Warehouses are made similar to dwelling houses. Trees are dug out of the mountains and those suitable for pillars are brought back to serve as supports, as illustrated.

These people engage in hunting, fishing, and trade. An unusual feature is that they use dogs, unlike the near *Orokko,* but like the people of the south. Rich or poor, each family feeds dogs with no less affection than the southerners do. Every member of a family, man or woman, feeds three to five dogs which are called father's dogs, mother's dogs, heir's dogs, second son's dogs, etc. One family then feeds a considerable number of dogs. They are used the same as in *Hatsushima.*

These people, both men and women, engage in trade with equal if not more eagerness than do the people of the south. Even on very short trips of a few miles, they will take goods for trade and bring back barter, and casual meetings of people of the same tribe will see occasional barter made during the course of chatting. Trade is the most important of their activities.

These people do not hesitate to borrow from or lend to strangers from distant places, as well as friends and relatives.

Forging is done here as in the south, although here iron ware is scarce so there is always a shortage of material to be used. They save broken pans for use in ironworking, and as these are naturally of inferior quality, forging becomes hard work to say nothing of the fact that in forging a sword only ten per cent of their raw material is of any use. Fishing is as in the south, although *Sashiami*[69] is practiced here as illustrated. This method is used at the mouth of an inlet or some other narrow place during the ebb and flow of tides, and brings a big catch.

On the seacoast near *Noteto* are many swamps

[67] Correctly *Sashi. Laminaria,* sp. Surface Kelp.

[68] Paper-covered sliding doors.

[69] Seining.

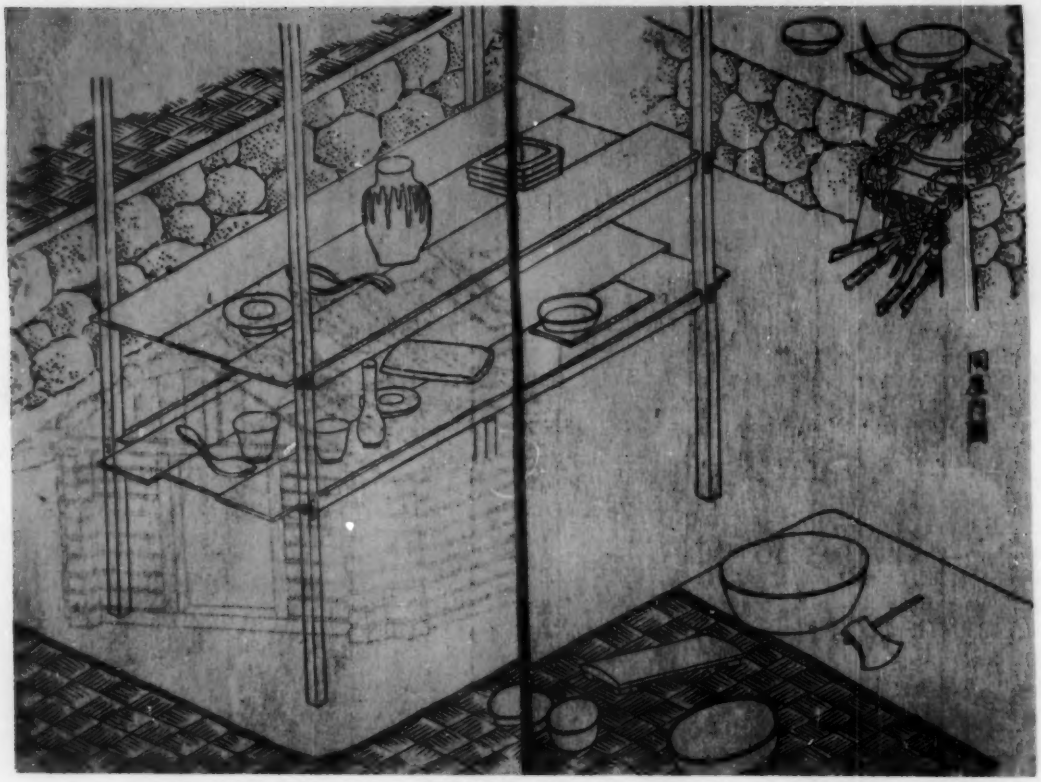

FIG. 5. Interior of a *Sumerenkuru* house showing fireplace, stone conduits for heating, utensils, and central storage rack.

and lakes as shown in the map. On these swamps and lakes there are clouds of small birds which resemble wild duck. Children catch these, as illustrated, by having one of them drive the birds while two others each hold the end of a rope which is then swung up to hit the flock of frightened birds as they come over. Usually, seven to eight birds will be hit with one blow of the rope length (which is eighteen to twenty-four feet long). Adults as well as children try their hand at this.

While their ways of hunting and fishing resemble those of the south, they who are robust will work day and night strenuously and will endure hunger and thirst which is not true of the southerners.

THE SUMERENKURU II

These people cherish the same objects as we do on Yezo—the dagger, sword guards, ornamental rivet heads for sword hilts, etc., all of which are imported from our country, although there is also a dagger imported from Manchuria. The hilt and sheaths of their swords are engraved in Yezo style and covered with pitch. Among these treasures is an inferior armor manufactured by the *Korutekke* and called *Betchi*. This is also highly valued by the Manchurian natives. It is made of thin iron plates linked together and lined with hide, as illustrated. Because of its inferior quality, it is not of any practical use, but is their greatest treasure, and in time of war, is worn by the chieftain and by any noblemen. Of the utensils in daily use, the lacquered ware, axe, pan, and other iron wares are imported from Japan. All other wares come from Manchuria. The bow and arrow are similar to that of Yezo, but the quiver, being different is illustrated. The various sizes and shapes of the tin pot and the earthen bowls are shown. They use the Manchurian plate

and their cup is either the standard cup or the cover of the nest bowl from Japan. The wine bottle in the top illustration is a basket made of *Hagi*.[70] Varnished inside with *Shibu*,[71] it can hold liquor and is durable. Allowing for variations in size, it holds twenty to forty pints. The wine bottle below is round, made of wood and coated outside with *Shibu*. This size contains from six to twelve pints. The natives make a stone tobacco pipe. They play a three-stringed instrument of fish skin, probably imported from East Mongolia. The pillow and hat in the sketches are made by the women. The pillow is of cotton decorated on the sides with colored silk and covered on that side where the head will be placed, with another cotton cloth. The hat, as illustrated, is of birch bark figured with dye. Unlike the southerners, these people decorate their wares with red, black, and other dyes which they get from Manchuria. Their ships are always manufactured by the *Korutekke* of Manchuria (to be described in the *Manshu Kikō*) [72] and not by themselves. Weak, inconvenient, and impractical, it cannot be used in a heavy sea. On board, one like that sketched, Rinsō went to Manchuria. The fittings are standard and the sail made of fishskin in the same shape as the Yezo sail. The sled, although a bit longer, is the same as that of *Hatsushima*.

No detailed observations were made of the ceremonies of crowning, marriage, funeral, and ancestral rites, but several facts will be described. There is nothing which can be called a crown and therefore no crowning ceremony. These people from *Kitoushi* to *Itoi* live among, and marry with, the alien *Hatsushima*. The bridal ceremonies were not personally observed and cannot be described in detail, but from what he was told by the natives there is little difference from the customs of Yezo. On betrothal the family of the bridegroom presents various presents to the family of the bride in payment for the hand of the girl. The usual betrothal presents of a chieftain are the great treasure, *Betchi*, and other valuables including a slave. All this shows the high reputation of women among them.

The custom of avoiding marriage among persons of the same family name is strictly observed, although the reason is unknown.[73] Never, as in our country, do cousins marry. Marriage seems to take place among those who live a distance apart—as much as 250 miles. Both men and women here are lustful so that there are many cases of illegitimate love. These affairs will often come to light when a marriage has been arranged and the two men will then compete for the woman, killing or injuring one another. Sometimes when a man is intimate with a girl, he will seduce her into coming to live at his house. In this event, more presents than usual are given to the father or brothers of the girl in order to secure their forgiveness and their permission to make her his wife.

These people will not speak of matters relative to death and so Rinsō heard nothing of this. But he did note that in cases of death the natives cry with deep sorrow. The funerals differ from those of the south. The body is burnt and the bones collected. A shrine is built next to the house and beside it is placed what looks like an *Orokko* coffin which is probably a container for the bones. This shrine stands more than two feet high and is built in proportion. It is of wood as illustrated, and contains an image for worship, to which fish, meat, tobacco, etc., are offered. Pieces of cloth are tied to the image. Services of devotion are rendered for some three to four years after the death, and then shrine and coffin are destroyed. As in Yezo, animal and fish heads and wooden *Hei* [74] are placed on the shore as offerings to the sea god. On the spot where the body is burnt, twigs are heaped up and an object similar to a *Torii* is built. In every house there is a shrine shelf on the back wall on which sits an image, as illustrated. What this image represents is not known, and although Rinsō inquired, the answers were not clear because of the difficult language. It is probably that god which protects the household.

APPENDIX

Among the *Sumerenkuru* of this island who make the annual trip to the Chinese government post in Manchuria to present tribute of animal skins and to return with gifts, are those called *Harata* (headmen) and *Kashinta* (second men). They receive their appointments from the Manchurians and are similar to the *Otona*, *Kozukai*, etc., of Yezo. Everywhere Rinsō inquired severely (and censorously) as to the origin of their subjugation to Manchuria. He was told this: In the olden days (the year was not known) before

[70] *Lespedeza bicolor*. Bush clover.

[71] A paste made from the juice of unripe persimmons.

[72] Presumably the *Tōdatsu Kikō*.

[73] In the Chinese sense of clan name.

[74] Propitiary offerings of wood resembling the cut paper offerings at Shinto shrines.

this island paid tribute to Manchuria, the ships of some country (perhaps Russian, although the natives said these ships were not that big) came to the island every year to trade skins. These people of these ships were exceptionally brutal and were dreaded by the islanders. Then one year (the exact year is not clear; it was probably in 1747 or 1748, since, Rinsō, in going over some yellowed papers which, together with some Manchurian brocade, had at that time been given to the islanders, found the date 1747) a large troop of Manchurians came to this island and went through it. The islanders mistook them for the brutal traders and many fled into the mountains. Those who remained were questioned by the Manchurians and finally, at *Itoi*, on the west coast (more than 360 miles from *Shiranushi*), a man called *Toruhēnu* was made *Harata;* at *Kauto*, about 120 miles north of *Itoi*, one *Urutogō* was made *Harata*, and at *Dowaka* (also called *Merukoa*), which is on the east coast some fifty miles through the mountains of *Noteto*, another *Harata* was appointed (at some unknown time, the descendants of the last came to live in *Tamuraō* on the west coast). In addition, many *Kashinta* were appointed and they all, Rinsō was told, go annually to pay tribute to Manchuria since the Manchurians left with a promise that they would exchange one roll of brocade for one sable skin tribute and would generally conduct trade on favorable terms. *Teiinu*, present chief of *Itoi* (presently living in *Uyakutou* and who was the one who accompanied Rinsō to the government office in Tōdatsu); *Mokkenu*, chieftain of *Kauto* and *Bohohanū*, chieftain of *Tamuraō* (both of whom Rinsō met at the government office in Tōdatsu) are the descendants of these original appointees and themselves *Harata*.

On the west coast about 120 miles north of *Shiranushi*, is a place called *Nayoro*. From there to *Riyonai*, the inhabitants have the same manners and customs as the southerners, but some, like the *Sumerenkuru*, have *Harata* and *Kashinta*, and are subject to Manchuria and make the annual trip to present tribute and receive gifts. When Rinsō visited there a second time,[75] he learned of the origins of this matter from four aged persons: *Fūreushikuru* (age, about seventy-five) of *Tokombu; Kunnetomi* (about seventy) of *Tonnaiworo; Ihenashui* (about seventy-five) of *Okō* and *Monjīkante* (about seventy-five) of *Nayoro*. In their childhood, the chieftain of *Nayoro* was one *Yayenhirakan* (probably the great, great-grandfather of the present chieftain *Yayenkuru*) who, by nature, was crafty and brutal. He killed more than ten of the *Santan* and *Sumerenkuru* of Manchuria who came there for trade, and he seized all they had brought (the circumstances responsible for this event were kept secret except that not murder, but robbery, was the chief motive). Those *Santan* who escaped complained in detail to the Manchurian authorities.

The following year, the Manchurians came to *Nayoro* aboard three ships and with them, came subordinate *Santan* and *Sumerenkuru*. (Rinsō was told that this was the first time the Manchurians came there, but that they returned after this to urge the offering of tribute. However, on this point the story of the old men is ambiguous and unreliable. For a long time, they related, the Manchurians came to *Taraika*, but in recent years, they have stopped coming.) At any rate, all those who had committed the violence of the preceding year were seized. All the chieftains of *Tonnai* island were called up and blamed for their failure to prevent violence despite their proximity to the region and all were threatened with punishment. In vain, the chiefs made obeisance for forgiveness and finally they offered treasure as ransom (called in their language *Tsukunoi*). The Manchurians professed themselves satisfied with this ransom and forgave them. However, they also proposed that *Yayehirakan*, as the most culpable, surrender his two sons, *Kantetsuroshike* and *Yochiteaino* as hostages; that thereafter the natives be subject to Manchuria; that the natives pay an annual tribute of hides and skins; that this tribute be rewarded with gifts and that, henceforth, any of their subjects who made the tribute mission to Manchuria would escape their wrath and receive their protection. Thus, they returned to Manchuria together with the ransom and the two sons. (This was the origin of hostages. At the present, the *Santan* take home, as hostages, the children or brothers of those who fail to repay their borrowed goods. Perhaps it is from this practice that there arises the rumor that the *Santan* buy the natives of Karafuto in order to increase the population of their homeland.) From that time on, tribute was offered, and some years later, the two hostages were released and a document was written and stamped and given them which appointed them as *Harata*, while every able bodied person was

[75] 1809.

designated as *Kashinta*. (This document has been handed down and is in the possession of the present chieftain, *Yayenkuru*, but is unreadable because it is written in Manchurian script. The stamp has the inscription "Office of the Vice Governor Commanding Troops in the I-Lan District."[76] A sketch Rinsō made of it is reproduced below.)[77] Ever since that time, the descendants of these men have succeeded to that office and every year they go to *Deren* together with other islanders and offer tribute. At present, only *Yayenkuru*, chief of *Nayoro*, is *Harata* and there are seven *Kashinta* (*Shirotomaaino* of *Nayoro*, *Monishūkote* of *Raichishika*, *Senbakuru* and *Ikonranke* both of *Ushiyoro*, *Riishiruaino* of *Naifutsu* on the east coast, *Nishikani* of *Shonkotan*, and *Shikarikato* of *Nuppu*). In recent time, owing to a shortage of pelts, they had to stop the annual visit and make their trip every second or third year. As the supply of furs continued to decrease, the visits to Manchuria were omitted for periods of as long as four or five years. However, as the Manchurians frequently urged them via the *Santan* to make tribute and as 1807 was a good year for pelts, three *Kashinta* (*Sembakuru*, *Shirotomaaino* and *Monishūkote*) accompanied by more than ten islanders went to Manchuria. On his first journey, Rinsō met them at Cape *Noteto* and on his second journey he was at *Horokotan* when their ships returned.[78] It was on this last occasion that he met the three men and had an opportunity to inquire into the events of this tribute mission. He was told that they had all reached the government station and in the traditional tribute ceremony had offered a sable skin and made obeisance to the *Shankei*[79] (which means an official in their language). The attitude of the official was not as in former days. Indeed they had been reproached for their failure to pay tribute and had been told to remember the favors of long years standing and ordered to bring tribute in the future. Among the *Sumerenkuru*, *Santan*, *Korutekke*, *Kimunaino*, etc., living in Eastern Mongolia, whose villages were visited by Rinsō, most villages had *Harata* and *Kashinta* in charge of the villagers. These men not only command the villagers and in addition, those *Santan* or *Sumerenkuru* come from Eastern Mongolia to *Nayoro* to trade, but also the natives of this island who go to Mongolia. In *Hanketaraika* on the east coast, there is a post which was set up long ago by the Manchurians. The illustration shows its present condition with the inscription so weathered as to be unreadable. Rinsō asked a native named *Hentankeshu* about the former condition of the post and was told that once the post had a shelter atop which protected the inscription underneath, and that this inscription had been written in letters thusly[80] (written by *Hentankeshu*) in four lines. Rinsō made a sketch (shown in the second illustration) and asked whether that is how the post had looked in older times and got a positive reply. Therefore that sketch is included here.

From *Ushiyoro* to *Noteto* there once came and lived one *Kamuchishimenamomuwashirē* and five others subject to Russia. They belonged to the race called *Kiren*.[81] Being exceptionally cunning and brutal, they inflicted violence on the islanders, fought and killed them, raped their women and picked quarrels with the visiting *Santan*. For three or four years they made so much trouble that finally the islanders, in cooperation with the *Santan*, attacked and wiped them out. Since then, there have been no other cases of immigration. At least this is the story told by the *Sumerenkuru*. When Rinsō inquired about the route taken by the immigrants, he was told that they had left a remote part of East Mongolia in the eastern sea on a small ship and had gone first to *Kamukata* from whence they had come to this island.

[76] In Northern Manchuria.

[77] Not produced in this text. In another text the gist of this document, which is not addressed to *Yayenkuru*, is given as follows: "Those Goldi or Gilyak who go to Pekin to offer tribute have hitherto left their place of residence in the winter. Therefore they have arrived in Pekin in the later winter or early spring when there is great danger of epidemics. Hereafter they must depart on their journey during the months of July, August or September and return to their homes before the spring."

[78] "First" and "Second" journey probably refer to his two stops at *Noteto* on his Manchurian trip.

[79] Manchu *Jangin* "military officer."

[80] At this point in the original are several lines sketched to resemble Manchu script.

[81] The *Samagiru* a nomad people in the Amur-Amgun region.

PUBLICATIONS

OF

The American Philosophical Society

The publications of the American Philosophical Society consist of PROCEEDINGS, TRANSACTIONS, MEMOIRS, and YEAR BOOK.

THE PROCEEDINGS contains papers which have been read before the Society in addition to other papers which have been accepted for publication by the Committee on Publications. In accordance with the present policy one volume is issued each year, consisting of six bimonthly numbers, and the price is $5.00 net per volume.

THE TRANSACTIONS, the oldest scholarly journal in America, was started in 1769 and is quarto size. In accordance with the present policy each annual volume is a collection of monographs each issued as a part. The annual subscription price is $6.00 net per volume; for both the PROCEEDINGS and the TRANSACTIONS $10.00.

Each volume of the MEMOIRS is published as a book. The titles cover the various fields of learning, the recent volumes being largely historical. The price of each volume is determined by its size and character.

The YEAR BOOK is of considerable interest to scholars because of the reports on grants for research and to libraries for this reason and because of the section dealing with the acquisitions of the Library. In addition it contains the Charter and Laws, and lists of present and former members, and reports of committees and meetings. The YEAR BOOK is published about April 1 for the preceding calendar year. The price is $1.50.

A catalogue of the contents of the publications may be had
by addressing the

AMERICAN PHILOSOPHICAL SOCIETY

INDEPENDENCE SQUARE

PHILADELPHIA 6, PA.

Recent Publications of the Society

PROCEEDINGS: Information concerning the articles published in the *Proceedings* may be obtained upon application to the office of the Society.

TRANSACTIONS:

Historic Philadelphia, from the Founding until the Early Nineteenth Century. Vol. 43, pt. 1, 331 pp., 285 figs., 1 folding map, 1953. $4.00 paper-bound; $6.00 cloth-bound.

Encyclopedic Dictionary of Roman Law, by ADOLF BERGER. Vol. 43, pt. 2, 476 pp., 1953. $5.00 paper-bound; $7.00 cloth-bound.

Studies on Chromosomes and Nuclear Division, by L. R. CLEVELAND. Vol. 43, pt. 3, 61 pp., 192 figs., 1953. $1.50.

The Ruling Power: A Study of the Roman Empire in the Second Century After Christ Through the Roman Oration of Aelius Aristides, by JAMES H. OLIVER, Vol. 43, pt. 4, 133 pp., 1953. $2.00.

The Monguors of the Kansu-Tibetan Frontier, by LOUIS M. J. SCHRAM. Vol. 44, pt. 1, 138 pp., 8 figs., 2 maps, 1954. $2.00.

Forgotten Leaders in Modern Medicine—Valentin, Gruby, Remak, Auerbach, by BRUNO KISCH. Vol. 44, pt. 2, 179 pp., 68 figs., 1954. $2.00.

An Annotated Collection of Mongolian Riddles, by ARCHER TAYLOR. Vol. 44, pt. 3, 107 pp., 1954. $2.00.

Jean-Sylvain Bailly, Astronomer, Mystic, Revolutionary, 1736–1793, by EDWIN B. SMITH. Vol. 44, pt. 4, 112 pp., 1 fig., 1954. $2.00.

An Early Archaeological Site near Panuco, Vera Cruz, by RICHARD S. MACNEISH. Vol. 44, pt. 5, 103 pp., 37 figs., 1954. $2.00.

The Illumination and Polarization of the Sunlit Sky on Rayleigh Scattering, by S. CHANDRASEKHAR and DONNA D. ELBERT. Vol. 44, pt. 6, 86 pp., 11 figs., 12 tables, 1954. $2.00.

Clarence Luther Herrick, Pioneer Naturalist, Teacher, and Psychobiologist, by C. JUDSON HERRICK. Vol. 45, pt. 1, 85 pp., 3 figs., 1955. $1.50.

MEMOIRS:

Erwin Frink Smith—A Story of North American Plant Pathology, by ANDREW DENNY RODGERS III. Vol. 31, 675 pp., 4 figs., 1952. $5.00.

The Primitive City of Timbuctoo, by HORACE MINER. Vol. 32, 297 pp., 22 figs., 1953. $5.00.

Age and Achievement, by HARVEY C. LEHMAN. Vol. 33, 359 pp., 170 figs., 1953. $7.50.

Michael Servetus. A Translation of his Geographical, Medical and Astrological Writings, by CHARLES D. O'MALLEY. Vol. 34, 208 pp., 6 figs., 1953. $3.00.

Thomas Jefferson's Farm Book, edited by EDWIN M. BETTS. Vol. 35, 552 pp., 8 pls., 1953. $12.00.

The Long Parliament, 1640-1641. A Biographical Study of its Members, by MARY FREAR KEELER. Vol. 36, 410 pp., 1954. $6.00.

Astrology in Roman Law and Politics, by FREDERICK H. CRAMER. Vol. 37, 291 pp., 22 figs., 1 map, 1954. $5.00.

Cumulative Record of Exhibition Catalogues. The Pennsylvania Academy of the Fine Arts, 1807–1870, compiled and edited by ANNA WELLS RUTLEDGE. Vol. 38, 450 pp., 1955. $6.00.